COTTON

Volume 84
Number Eight
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JUNE, 1920

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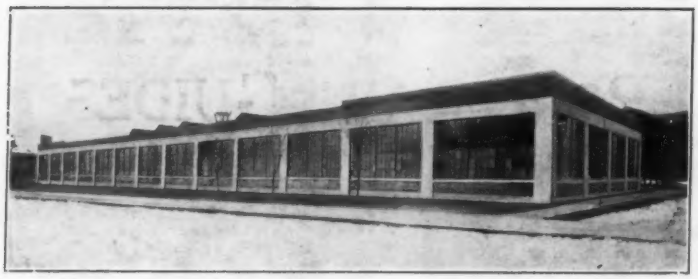

NEW PLANT AT TRENTON, N. J.

Production Increased to Meet Growing Demand

The demand for Mitchell-Bissell Co. Porcelain Guides and Rings for Textile Machinery is growing so rapidly that we have again enlarged our manufacturing facilities in order to keep up with it.

This growing demand can mean only one thing—a fuller realization by Textile Manufacturers that it pays to buy the BEST Porcelain Guides and Rings.

Mitchell-Bissell Co. Guides and Rings *are* the best because they are the hardest, smoothest and longest wearing of any that are manufactured today.

Our Guides and Rings are made in an infinite variety of designs to meet every requirement.

Send for Catalogue

MITCHELL-BISSELL CO.
251-255 FOURTH AVENUE, NEW YORK

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PORCELAIN GUIDES

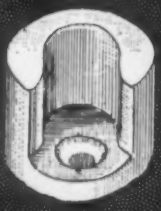
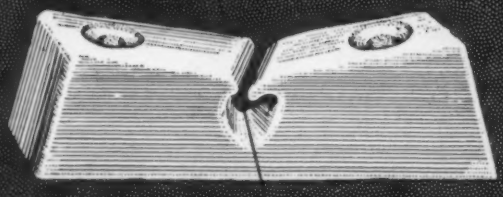
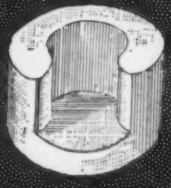
for

Textile Machinery

Mitchell-Bissell Co.

251-255 Fourth Avenue, New York

Send for
New Catalogue

DRAPER CORPORATION

NORTHROP LOOM REPAIRS

FIT

NORTHROP LOOMS

TRADE-MARK REGISTERED

MADE BY

DRAPER CORPORATION

HOPEDALE MASSACHUSETTS

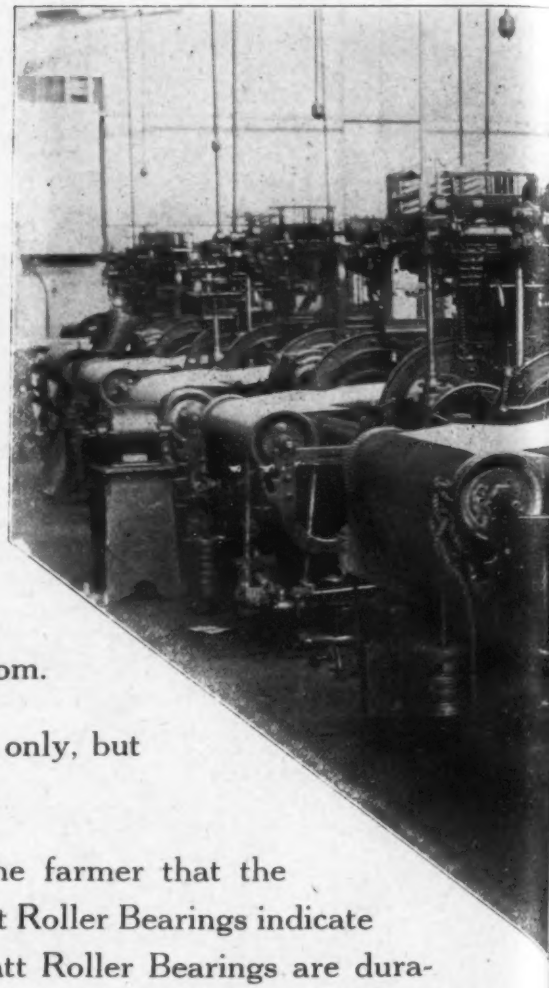
Southern Office
188 South Forsyth Street Atlanta Georgia

Copyright 1917 by Draper Corporation

PICK YOUR LOOMS A

A farmer whose tractor had gone back on him right in the middle of his busiest season asked a friend, "Sam, how did you come to buy a tractor that's so much better than the one I've got?"

Sam replied, "It's this way. When I'm looking over a new piece of machinery I always look first in the tool box. If the monkey wrench that is supplied is good and husky I can generally bank on the machine itself."



This is an excellent way for textile manufacturers to pick out the right kind of loom.

Don't look at the looms from the outside only, but look at the working parts—the bearings.

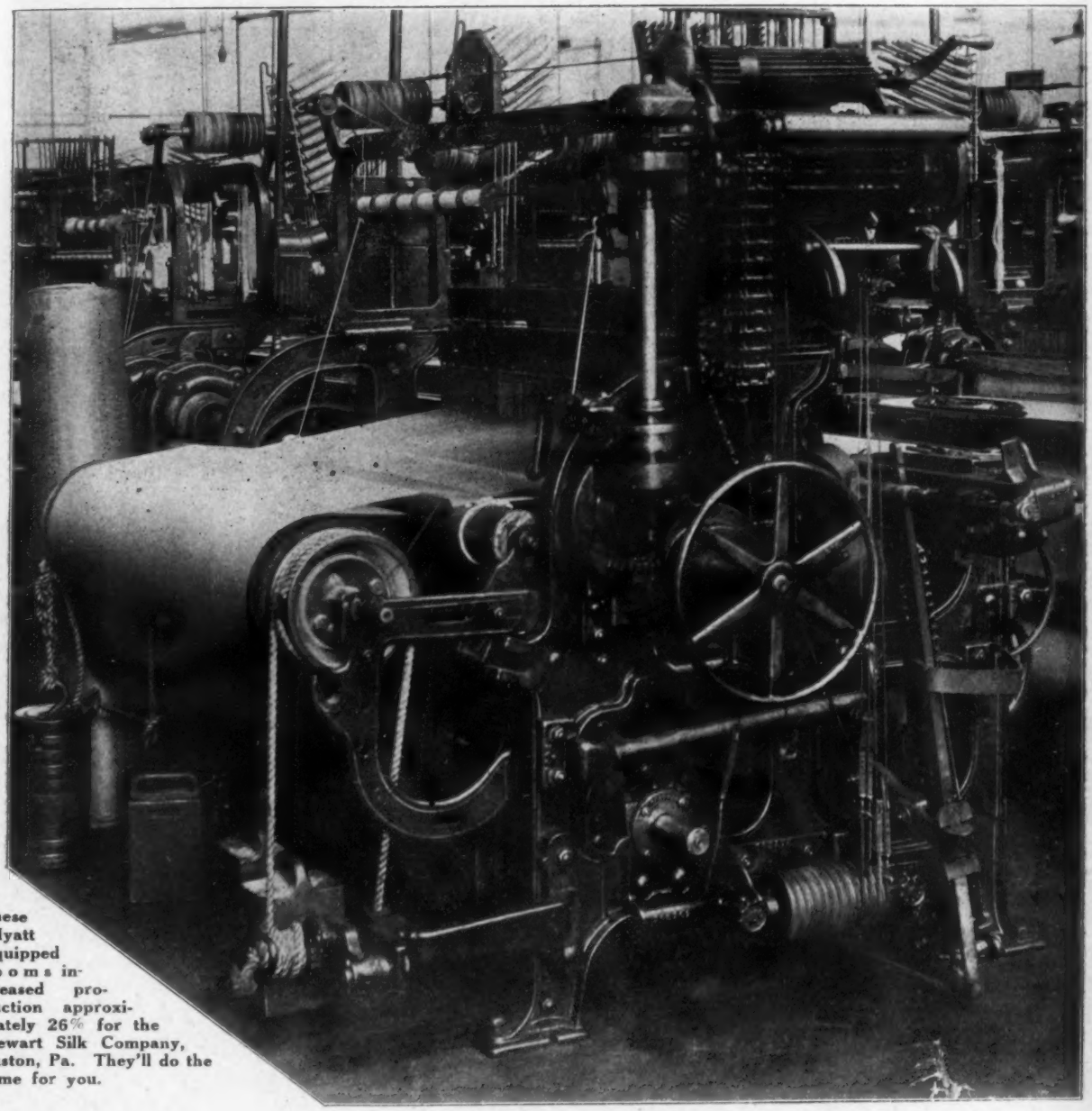
Just as the husky wrench indicated to the farmer that the machinery would last longer, so do Hyatt Roller Bearings indicate that looms will give better service. Hyatt Roller Bearings are durable, dependable, save power and lub ricant and exclude dirt and dust.

Moreover, they increase production. Take the looms pictured here for instance. These Hyatt equipped looms increased production approximately 26% for the Stewart Silk Company, Easton, Pa.

When you buy looms look at the bearings. If they are Hyatt Roller Bearings you can bank on the looms. If not, specify them. Write for our data on looms at once.

HYATT BEARINGS FOR

SAM PICKED HIS TRACTOR



These Hyatt equipped looms increased production approximately 26% for the Stewart Silk Company, Easton, Pa. They'll do the same for you.

HYATT ROLLER BEARING COMPANY
INDUSTRIAL BEARINGS DIVISION
NEW YORK, N. Y.

MOTOR BEARINGS DIVISION
DETROIT, MICH.

TRACTOR BEARINGS DIVISION
CHICAGO, ILL.

Manufacturers of Bearings for Mine Cars, Ore Cars, Steel Mill Cars, Roller Tables, Trolleys, Cranes, Hoists, Machine Tools, Line Shafts, Countershafts, Concrete Machinery, Textile Machinery, Conveyors, Lift Trucks, Industrial Trucks, Railway Service Cars, Storage Battery, Locomotives, Etc.

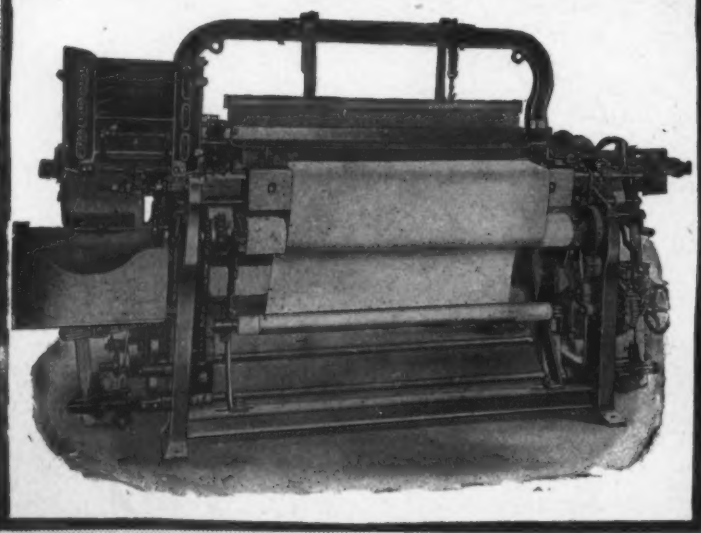
TEXTILE MACHINERY

Dependable Looms

STAFFORD DUCK LOOM

The Stafford Company for a great many years has concentrated on the production of a strictly practical loom. Convincing proof of the soundness of this idea is found in the large list of repeat orders for Stafford looms from a steadily growing list of progressive mills both in this country and Canada.

THE STAFFORD COMPANY



Readville
Mass.

Southern Agent
J. H. MAYES
Charlotte
N. C.

Simplicity

Excelsior Cocoanut Oil Emulsion is made over a simple formula. It is an emulsion of pure cocoanut oil, with only those materials added which are necessary to emulsify this oil properly.

True, the limits within which these few ingredients may vary are narrow and exceptional care is taken to prevent any deviation from a fixed standard, but the **product itself is a simple thing.**

You know what you are using, when Excelsior Cocoanut Oil Emulsion is applied as a softener in your processes.

Excelsior
COCOANUT OIL
Emulsion

An oil or fat to be used as a softener must be emulsified perfectly in order that uniform effects can be secured. The advantages of a properly made softener are far reaching—as are also the disadvantages of an improperly prepared softener.

Purity, concentration, uniformity and permanence of emulsion make Excelsior Cocoanut Oil Emulsion the highest value softener. It is manufactured and sold **only by ourselves**—direct to the mills. We recognize the responsibility which we accept when we recommend a softener—and have no desire to delegate this responsibility.—"Look us up."

Textile Oil Department.

The MOORE OIL REFINING Co. CINCINNATI, O.

NO GUARANTEE REQUIRED FOR

On October 6, 1909, when Hyatt Roller Bearing Hangers were not so well known, it was necessary to make a five-year guarantee in order to obtain an order for Hyatt Roller Bearing Hangers from the Harley-Davidson Motor Company.

But on November 14, 1919, when Hyatt Roller Bearing Hangers had become widely known for their durability and dependability, there was no mention of a guarantee on a repeat order from this company.

Because of the ten years of reliable, economical operation received from their first Hyatt Roller Bearing Hangers, the Harley-Davidson Motor Company looks upon them as a product which **needs no guarantee.** Hyatt Roller Bearing Hangers stand on their own merits—savings in power and lubrication costs, their positive self-oiling feature and their length of life (29 years in some plants). These merits make Hyatt Roller Bearing Hangers standardized transmission equipment.

Transmission engineers who specify Hyatt Roller Bearing Hangers can make sure of this same reliable, economical operation. Write for our bulletin No. 125 and investigate the many advantages of Hyatt Roller Bearing Hangers.

D-120

MOTOR BEARINGS DIVISION
DETROIT, MICHIGAN

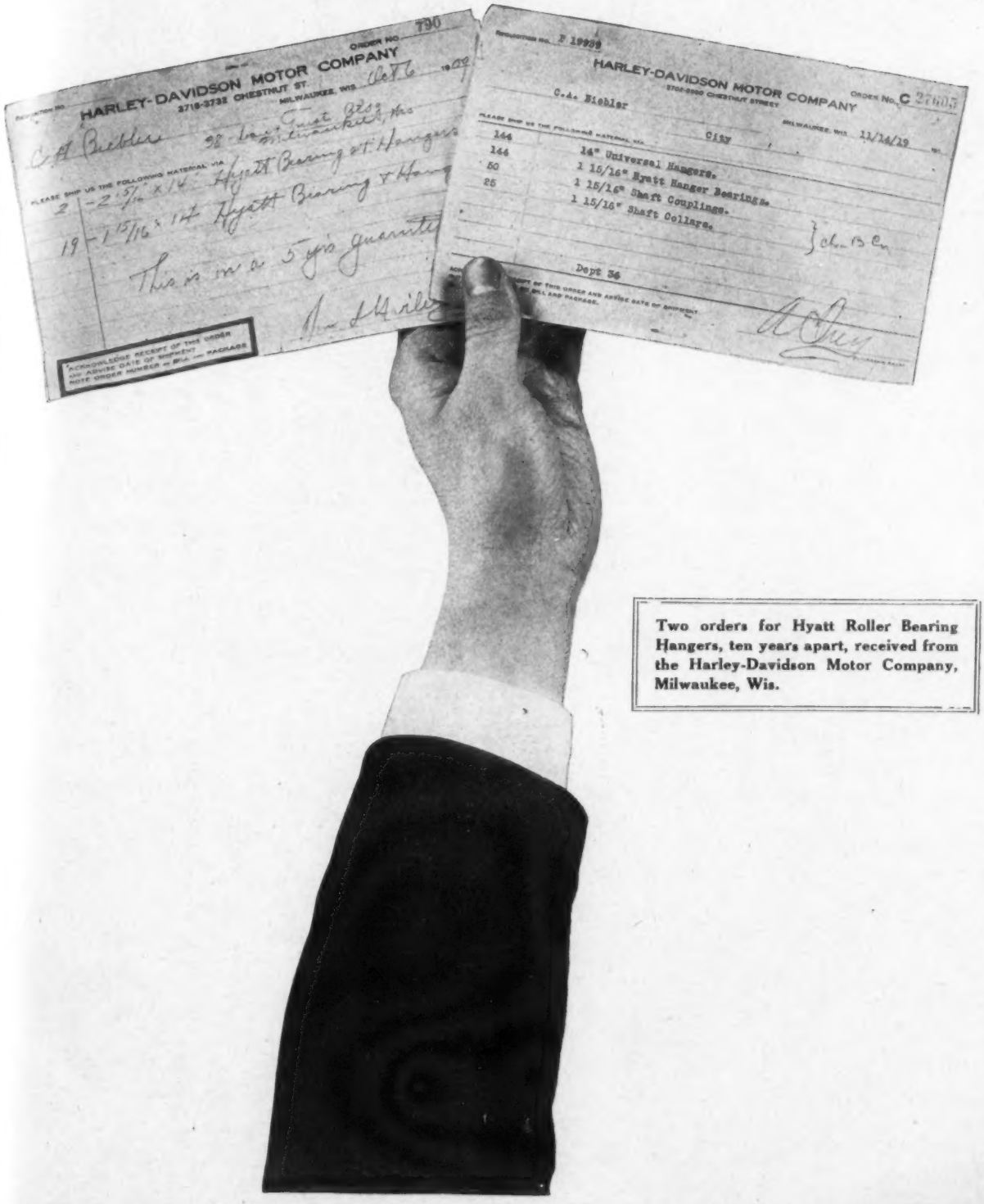
HYATT ROLLER BEARING OOMPANY
INDUSTRIAL BEARINGS DIVISION
NEW YORK, N. Y.

TRACTOR BEARINGS DIVISION
CHICAGO, ILLINOIS

Manufacturers of Bearings for Mine Cars, Ore Cars, Steel Mill Cars, Roller Tables, Trolleys, Cranes, Hoists, Machine Tools. Line Shafts, Countershafts, Concrete Machinery, Textile Machinery, Conveyors, Lift Trucks, Industrial Trucks, Railway Service Cars, Storage Battery Locomotives, etc.

HYATT BEARINGS

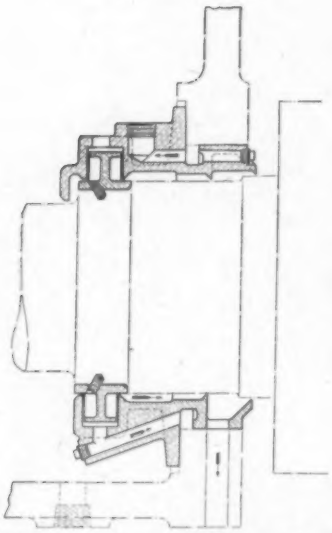
STANDARDIZED TRANSMISSION EQUIPMENT


HARLEY-DAVIDSON MOTOR COMPANY
3718-3732 CHESTNUT ST.
MILWAUKEE, WIS.
ORDER NO. 790
C. A. Biebler
2 - 2 7/16 x 14 Hyatt Bearing
19 - 1 15/16 x 14 Hyatt Bearing
This is on a 5 yrs Guarantee
HARLEY-DAVIDSON MOTOR COMPANY
ORDER No. C 27603
C.A. Biebler
City
144 14" Universal Hangers.
50 1 15/16" Hyatt Hanger Bearings.
25 1 15/16" Shaft Couplings.
1 15/16" Shaft Collars.
Dept 36

Two orders for Hyatt Roller Bearing Hangers, ten years apart, received from the Harley-Davidson Motor Company, Milwaukee, Wis.

FOR LINE SHAFTS

Reliable—and Why



No Rubbing Parts In the Westinghouse Water-Sealed Gland

(Advertisement No. 3—Feature No. 3)

THE packing of a steam turbine is a detail of great importance and deserving of the careful consideration of the turbine buyer.

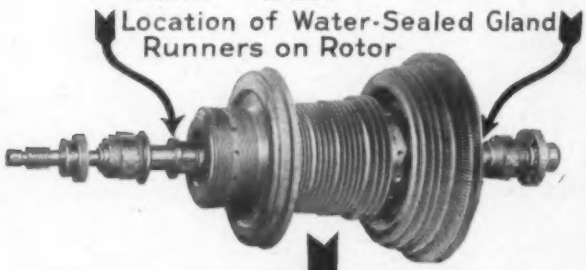
The function of the turbine packing gland is to seal the turbine against the admission of air into the turbine cylinder when operating condensing, and to prevent the escape of steam to atmosphere during non-condensing operation.

Turbine packing glands are of three general types:

First—Those depending upon the rubbing contact of carbon rings, which necessarily entails wear and sometimes local heating of the turbine shaft, as well as objectionable air leakage into the turbine and steam leakage into the engine room.

Second — Those employing labyrinth packing, which is steam-sealed. Objectionable steam leakage into the engine room, and impaired economy owing to lowered vacuum, are common to this type.

Third—The Westinghouse Water-Sealed Gland, in which there are no rubbing parts, and in which there can be no wear. The seal is perfect, with nothing to impair the turbine efficiency.



The Westinghouse Water-Sealed Gland contributes materially to the high operating efficiency and the reliability of the Westinghouse Steam Turbine.

W
WESTINGHOUSE ELECTRIC

Westinghouse Electric & Manufacturing Co.
East Pittsburgh, Pa.

1047

Westinghouse

Rosemary Manufacturing Co.

ROANOKE RAPIDS, N. C.

Using a Large Number of Individually Driven Looms

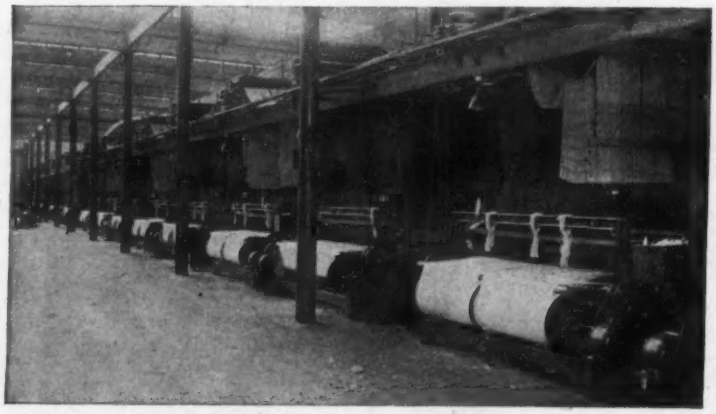
Like the many others who have installed Westinghouse Individual Loom Motor Drive, the Rosemary Manufacturing Co. has achieved these results:

(1) A product of better quality.
(2) A reduction in power expense.
(3) Increased output.

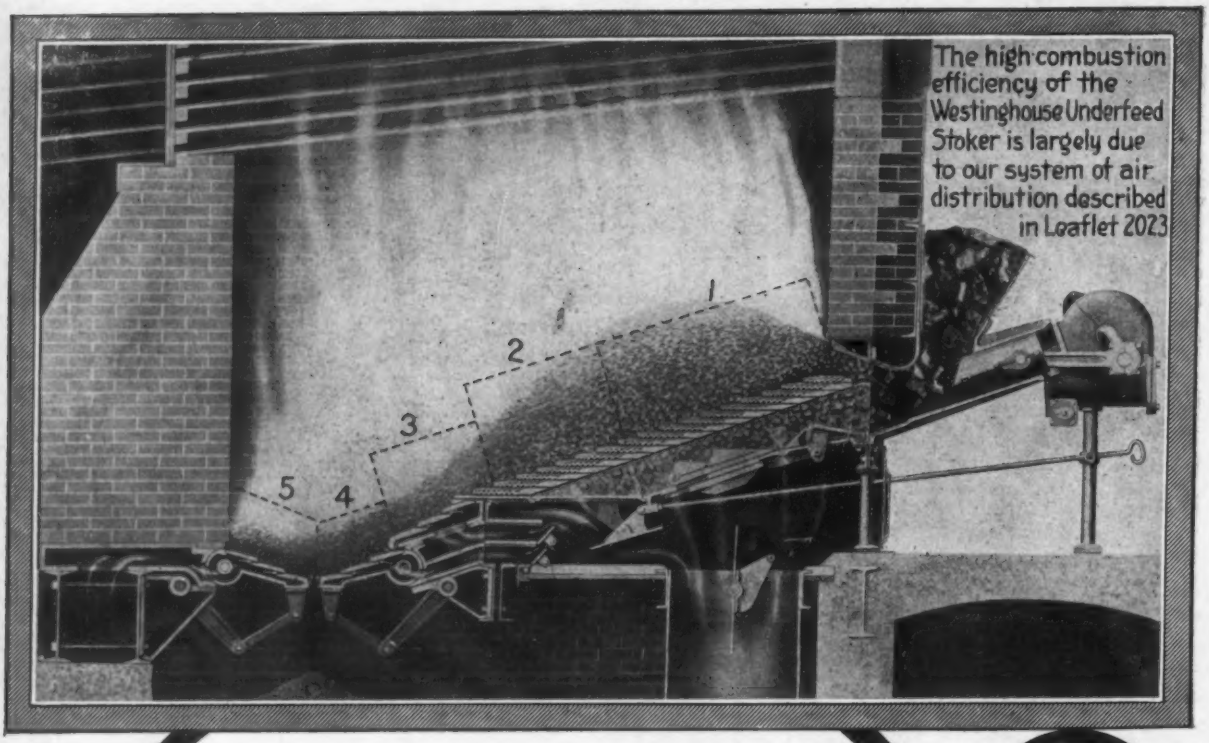
The satisfaction experienced with Westinghouse Individual Loom Drive is clearly indicated by the frequent repeat orders that have come from this customer.

The broad experience of Westinghouse Textile Power Experts is always available in the solution of your power problems.

Westinghouse Electric & Manufacturing Co.
East Pitsburgh, Pa.
908



Westinghouse


The high combustion efficiency of the Westinghouse Underfeed Stoker is largely due to our system of air distribution described in Leaflet 2023
1
2
3
4
5

—Sometimes it is helpful, in selecting a stoker, to know *who* has installed the type you have in mind, *and why*.

—Leaflet 3491 tells who have picked the Westinghouse Underfeed.

—Leaflet 1615 describes the fuel and load conditions for which the Westinghouse Underfeed is best fitted.

—*Write our nearest office for circulars.*

W
WESTINGHOUSE ELECTRIC

Westinghouse Electric & Manufacturing Company
East Pittsburgh, Pa.

Sales Offices in All Large American Cities

999

The Choice of a Stoker always narrows down to a Study of Plant Requirements.

Westinghouse

Underfeed, Roney and Chain Grate Stokers

CORBITT

Motor Trucks

Worm Driven

Built and engined to shoulder their way through staggering trucking jobs with surprisingly low upkeep and operating costs.

Every part in a Corbitt Truck is built for Power. Continental Red Seal Motors with latest design governor which controls speed of motor, regulates supply of gas and acts as brake, and every other highest known standard unit throughout, identify the durability and repair-free service of this great truck.

Corbitt Trucks have stood up under the severest tests for nine years. There is not yet a worn-out Corbitt Truck on record.

Six sizes—1 to 5 tons. We will gladly help you to select the model best suited to your business.

Write for new Corbitt catalogue and full information.

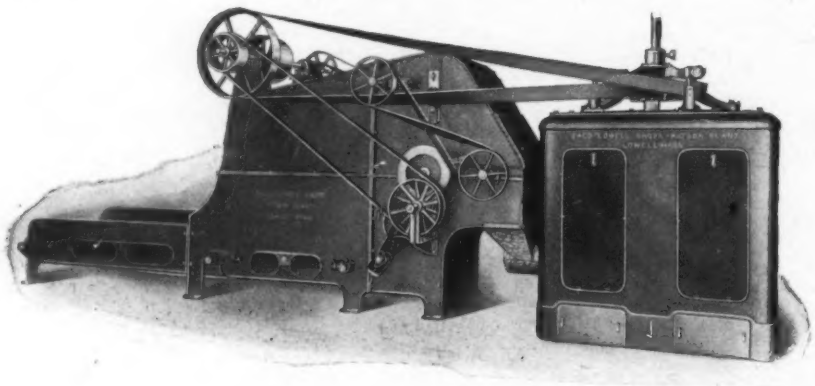
Corbitt Motor Truck Company

Henderson, N. C.

SACO-LOWELL SHOPS
Cotton Machinery

INCLUDING

OPENING, CONVEYING AND DISTRIBUTING EQUIPMENT



VERTICAL OPENER COMBINATION

PICKING ROVING WARPING
CARDING SPINNING SLASHING
DRAWING SPOOLING TWISTING

Waste Reclaiming Machinery

SHOPS AT

LOWELL, MASS. BIDDEFORD, ME.
NEWTON UPPER FALLS, MASS.

EXECUTIVE OFFICES
BOSTON, MASS.

ROGERS W. DAVIS, Southern Agent, CHARLOTTE, N. C.

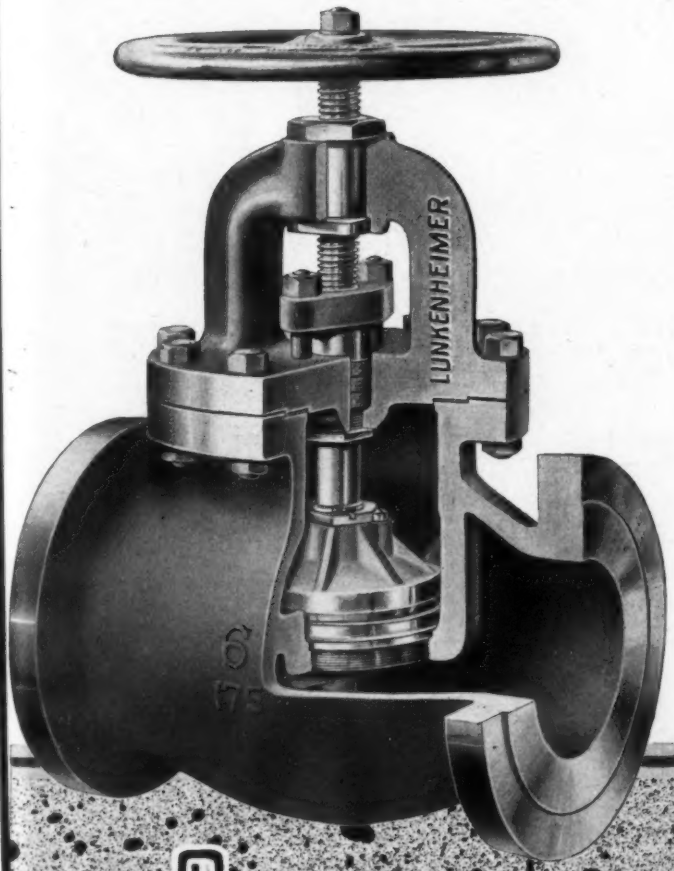
Southern Branch Office, GREENVILLE, S. C.

-lasting satisfaction

LUNKENHEIMER

IRON BODY BRONZE MOUNTED

GLOBE, ANGLE, CROSS & CHECK VALVES



give lasting satisfaction in service. Their design, extreme strength and durability due to the high quality materials used, and the Lunkenheimer system of test and inspection which they undergo, insure safety and maximum valve service.

Lunkenheimer "Valve-iron" is close grained and has a tensile strength far in excess of the iron used in the average valve. The trimmings are made of Lunkenheimer "Valve-bronze," a material possessing extreme wear resisting qualities.

The spring seat, peculiar to Lunkenheimer valves, will compensate for any slight distortion which may be caused by temperature change or pipe strains. The seating surfaces are re-grindable and all the parts renewable.

For high temperature service these valves can be supplied with trimmings made of Lunkenheimer "Valve-nickel"

All standard sizes, in three weights, for working steam pressures up to 125, 175 and 250 pounds.

Specify LUNKENHEIMER Iron Body Valves and insist on their installation.

Distributors of Lunkenheimer Products situated in every commercial centre.

THE LUNKENHEIMER CO.
"QUALITY"

Largest Manufacturers of
High Grade Engineering Specialties
in the World

CINCINNATI

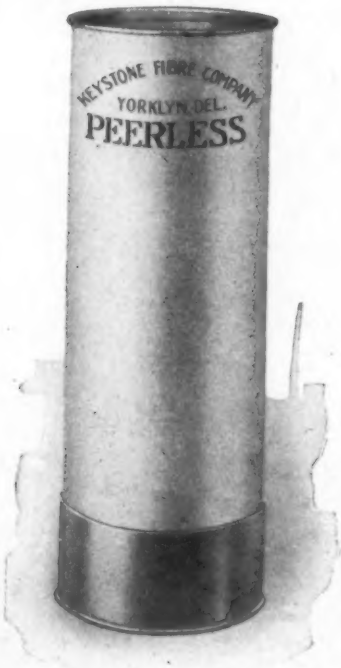
New York Chicago Boston London,

AMERICA'S BEST
LUNKENHEIMER
QUALITY
SINCE 1862

STRENGTH with LIGHTNESS

WHEN the Curtiss Brothers set out to add the Eagle's path to man's highways with the airplane, their construction policy was strength with lightness.

The needs of all industrial constructions are being met nowadays with material that combines utmost strength with minimum weight.



KEYSTONE "PEERLESS" SEAMLESS ROVING CANS

hold undisputed preference wherever the efficiency of mill equipment is gauged by long-lasting durability and lightness.

They are strong, easy to handle, and are made of Keystone Fibre—the fibre that will outlast by many years any other fibre twice as heavy.

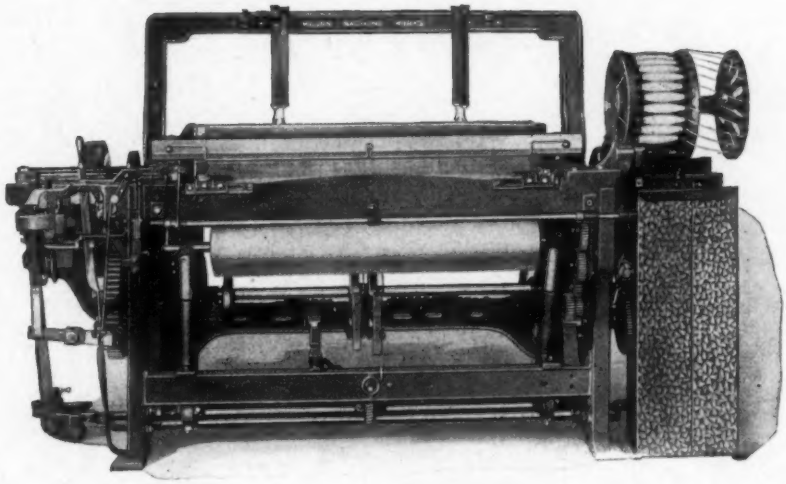
Equip your mill with these roving cans of highest efficiency.

Your mill supply house has them.

Write for our book on Keystone Holloware Mill Equipment.

Keystone Fibre Company

BOX 146 **Yorklyn, Delaware**



Mason Automatic Loom

With Battery, Warp Stop Motion, Feeler and Shuttle Lock. Randolph Crompton's patents. Fewer parts. Standard Construction. Rebounding Shuttles Overcome. Damage to Shuttles and Bobbins Reduced.

Mason Machine Works

Taunton, Mass.

E. Howard, Southern Agent, Greenville, S. C.

Air Conditioning Systems

No single air conditioning system will apply to all requirements of humidifying. There is a right kind for your particular problem. Note our complete line.

Central Station Equipment

1. Ventilating
2. Cooling
3. Heating
4. Humidifying
5. Constant Regain
6. Air Cleansing

Fan Driven (High Duty) Humidifiers

1. Local ventilating, and super capacity in air conditioning. 2. Wall ventilating type.

These with Electrically driven fans.

Atomizer Type Humidifiers

1. General Mill use, best adapted to old or low posted rooms. 2. Special applications, such as direct application of moisture on picker-laps, a further refinement being the Turbo-Sprayer. 3. Compressed air cleaning as a by-product.

Spray Type Humidifiers

Same as High-Duty, without fans. Not as effective as High-Duty. Recommended for special cases only.

Humidity Regulating and Indicating Apparatus

Parks-Cramer Company

Engineers & Contractors

Industrial Piping and Air Conditioning

Fitchburg Boston Charlotte

WHITIN MACHINE WORKS

ESTABLISHED 1831.

TEXTILE MACHINERY

Manufacturers of the Following Machines

COTTON MACHINERY

Opening	Drawing Frames
Conveying	Roving Frames
Distributing	Spinning Frames
Picking	Spoolers
Revolving Flat Cards	Twisters
Sliver Lap Machines	Reels
Ribbon Lap Machines	Quillers
Combing Machines	

COTTON WASTE MACHINERY

COTTON AND WOOLEN SYSTEMS

Openers	Revolving Flat Cards
Pickers	Derby Doublers
Willows	Roving Frames
Card Feeds	Spinning Frames
Full Roller Cards	Spoolers
Condensers	Twisters

Special Spinning Frames

WOOLEN MACHINERY

Card Feeds	Condensers
Full Roller Cards	Wool Spinning Frames

WORSTED MACHINERY

Cone Roving Frames

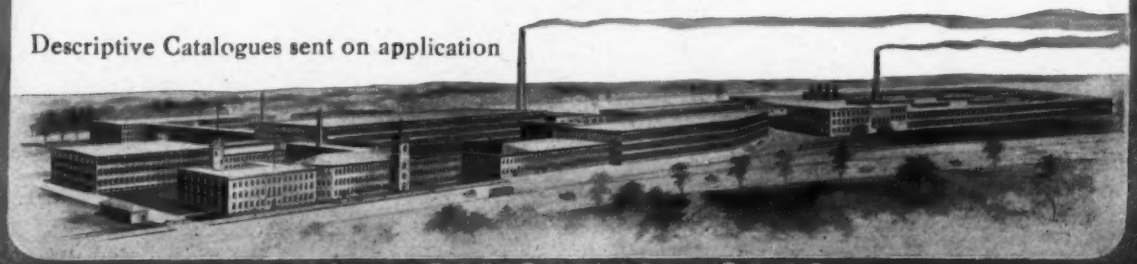
ALSO MAKERS OF

Rings, Spindles, Flyers, Saddles and Hank Clocks

for All Makes of

Spinning, Twisting and Roving Frames

Descriptive Catalogues sent on application



MAIN OFFICE AND WORKS

WHITINSVILLE, MASS., U.S.A.

SOUTHERN OFFICE CHARLOTTE, N.C.

"Water—Water Everywhere And All Too Warm to Drink"

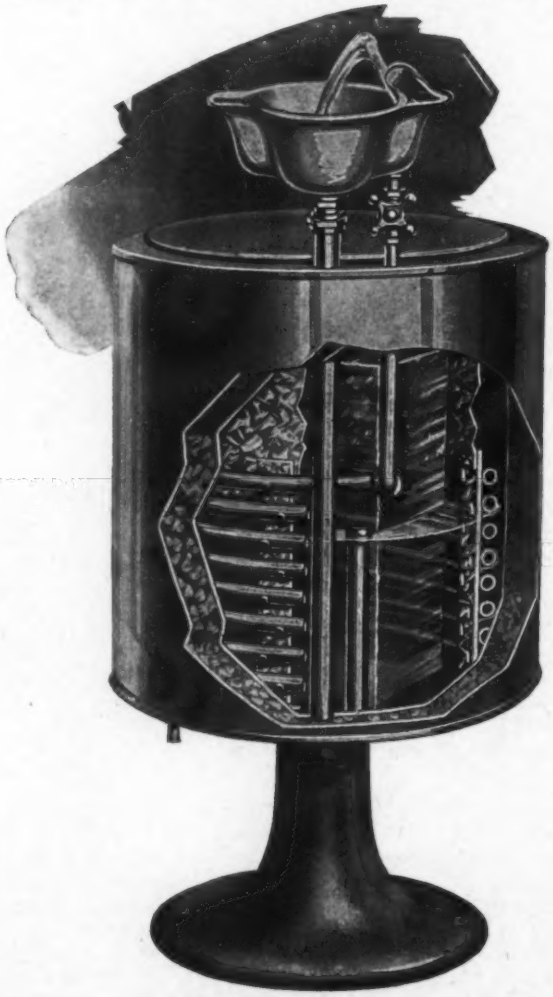
Cool, palatable Drinking Water served from sanitary Government approved PURITAN "CANTONMENT" FOUNTAINS AND COOLERS will go farther than any other thing to maintain your maximum production curve during hot summer months; besides making healthy, happy and contented employees.

PURITAN "CANTONMENT" FOUNTAINS AND COOLERS were designed to meet the demand of our Government for better drinking equipment for use in Cantonments, Naval Training Stations, etc.

We are the largest exclusive manufacturers of Drinking Equipment and, our fountains are installed in practically all of the country's largest organizations, including Schools, Parks, etc., etc.

—ILLUSTRATIVE LITERATURE UPON REQUEST—

Illustration is of our No. S-570 Cooler Fountain



Puritan Fountains and Coolers are without doubt the most efficient from every standpoint.

A POSITIVE GUARANTEE OF CLEANLINESS

"PURITAN" THE ONLY KIND YOU CAN AFFORD

ABSOLUTELY SANITARY

FOOL-PROOF PRACTICAL

Puritan DRINKING FOUNTAINS

Halsey W. Taylor Co.

Warren, Ohio.

Puritan DRINKING FOUNTAINS

"APPROVED AND ADOPTED BY ALL DEPARTMENTS OF THE ARMY AND NAVY"

1888 1920

Established Reliability in Humidification

OUR EQUIPMENTS ARE GUARANTEED TO SATISFACTORILY PERFORM THE SPECIFIC WORK FOR WHICH THEY ARE RECOMMENDED

The development of our systems has always kept in advance of the progress of the science of humidification as applied to textile manufacture.

The recognized necessity of adequate humidity, involving abnormal distribution of moisture automatically controlled to exact requirements, found our

HIGH DUTY FAN TYPE MOTOR DRIVEN HUMIDIFIER

with automatic control requisite for the most exacting demands, proved and perfected by years of service and experience.

OUR AUTOMATIC HUMIDITY CONTROL

is independent of electrical or complicated mechanism. It is designed and constructed for Practical Mill Usage, requires no Skilled Attendance, and is Efficient and Reliable.

The volume of orders received during the first three months of 1920 far surpasses all our previous records, a majority being repeat orders from those who know the satisfactory performance of our equipment.

While we are booking large contracts for the High Duty type, we also have a large volume of business in orders for our regular Comins Sectional Humidifiers, and Atomizer or Compressed Air Systems.

Our Specialties are all STANDARDS of MODERN TEXTILE MILL EQUIPMENT

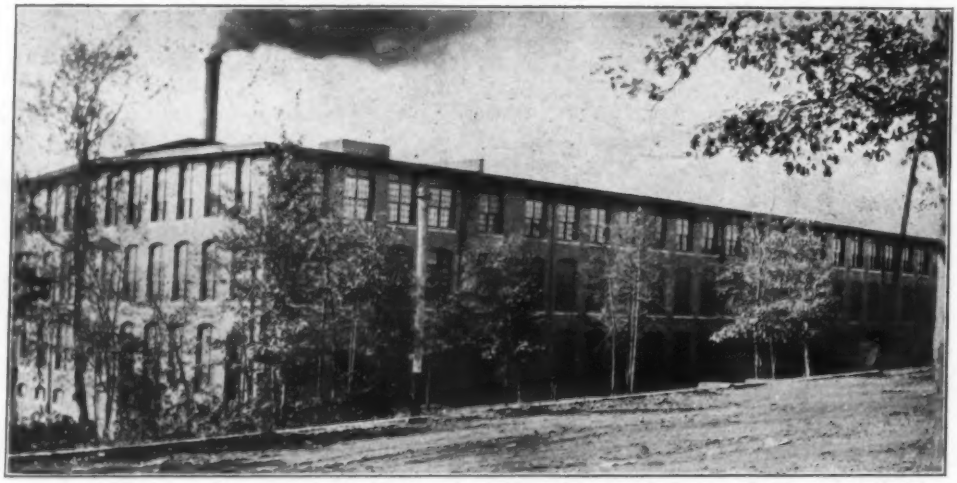
Our COMINS SECTIONAL HUMIDIFIERS
Our FAN TYPE and HIGH DUTY HUMIDIFIERS
Our VENTILATING Type of Humidifiers (Taking fresh air into the room from outside)
Our ATOMIZERS or COMPRESSED AIR SYSTEM
Our COMPRESSED AIR CLEANING SYSTEM
Our CONDITIONING ROOM EQUIPMENT
Our AUTOMATIC HUMIDITY CONTROL (Can be appled to systems already installed)
Our AUTOMATIC TEMPERATURE CONTROL

American Moistening Company

Boston, Mass. Atlanta, Ga.

WILLIAM R. WEST, President
W. R. GRACE & CO., New York
ANDERSEN, MEYER & CO., LTD. Shanghai, China
FRANK B. COMINS, Vice-Pres., Treas. & Gen'l Mgr.
W. J. WESTAWAY CO. Hamilton, Canada

"Sirocco"
TRADE MARK



In Southern Cotton Mills

Old time methods are giving way to new ideas. Yesterday's plans are being thrown into the discard because it is realized that business today must be handled along different lines from that of the past.

In the Cotton mill and Textile plant conditioned air is playing a big part in production. A higher quality of product and more helpful employees is the rule in a plant equipped with Sirocco Air Conditioning apparatus.

If it is a question of ventilating equipment one of our Sales Engineers located near you will give you definite information as to how Sirocco equipment can be utilized for your needs.

American Blower Company

DETROIT, MICH.

300 Days' Labor Lost Each Week

That's 15,600 Days Each Year

National Marking Inks— BEST for all purposes.

TIME is money! You can save this tremendous PRODUCTIVE TIME that is lost when your workers stay home to wash and iron, if you install your own Mill Village Laundry, and do the work at cost. Your employees can earn more in the mill than they can save by staying home and washing.

Your Mill Village Plant can do all the washing for all of your employees—in a modern, sanitary fashion—all household pieces can be handled, as well as coats, aprons, uniforms—any garments used by your employees at their work.

In Arranging for Your Mill Village Laundry

be sure to include "National" Equipment, so that all garments can be IDENTIFIED. This will insure the return of every piece sent. Result: satisfied employees.

WE illustrate our Improved No. 8 National Power Marking Machine, which marks all articles neatly and indelibly. Write us today—let us advise you regarding a Mill Village Laundry.

TEXTILE DEPARTMENT OF

The National Marking Machine Co.

1068 Gilbert Ave. **General Offices** **Cincinnati, O.**

New York Office: 40-44 West Fourth St., New York City.

Boston Office: 100 Boylston St., Room 722, Colonial Bldg.

Chicago Office: 707-8 Cambridge Bldg., 160 N. Wells St.

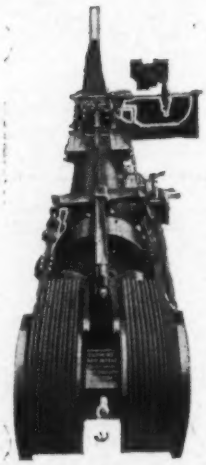
Philadelphia Office: 125 N. 10th St.

COMPRESSING 56 lbs. to the cubic foot, the CUMMIN'S HIGH DENSITY PRESS makes it possible for a much greater amount of cotton to be stored in a freight car or on shipboard than is possible under the old process of baling.

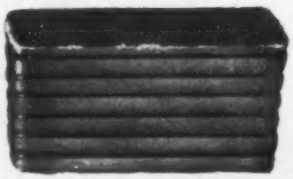
ONE of the biggest problems has always been that of transportation at the minimum amount of expense and to deliver cotton at its destination in the best condition. Proper baling has effectively solved this problem.

To have proper baling it is necessary to have uniformity as well as density and this is what Cummin's Presses provide. Further, they mean more, for in the terms of money they pay in actual dollars and cents. More cotton can be loaded—it will stand rougher handling, and still can be delivered in just as good condition as when loaded.

This modern method for the marketing of cotton is here to stay. It will continue to revolutionize the industry. Old time methods must make way for modern systems in order for the wheels of industry to keep turning. The economy of the Cummin's press is so evident that there is no question as to its absolute superiority.



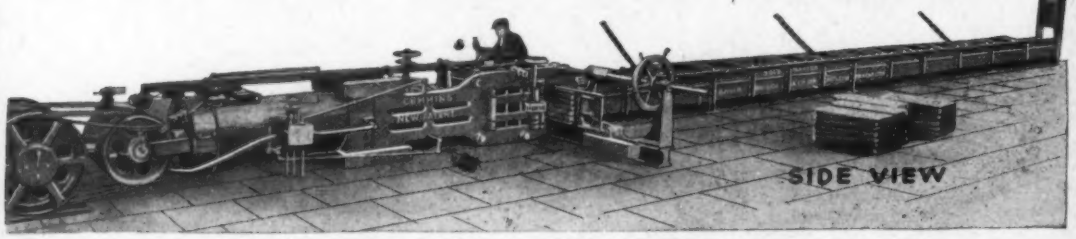
END-PRESSED baling has demonstrated its value to the cotton industry so conclusively that not to utilize it in service every season is just the same as doing away with the motor or some one of the thousand other utilities.

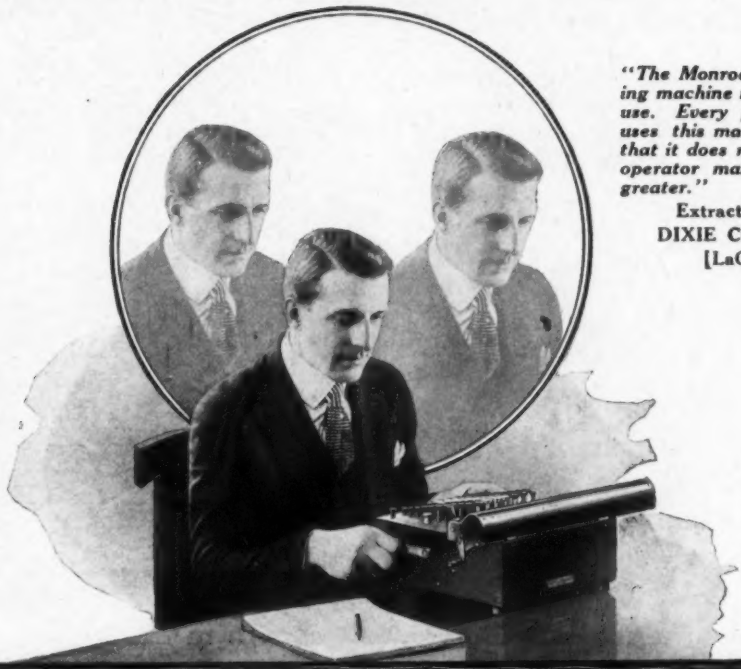


Write today for our descriptive catalog.

W. D. CRUMPTON, Inc., American Representative, 8-10 Bridge St., NEW YORK, N. Y.

DAVID BRIDGE & COMPANY, Ltd., Manchester, England.





"The Monroe is the best calculating machine made for Cotton Mill use. Every person in our office uses this machine, and the fact that it does not require a special operator makes its value to us greater."

Extract of letter from
DIXIE COTTON MILLS,
[LaGrange, Ga.

An extra set of brains for **everyone** in your office—that is the Monroe Calculating Machine. It will do all the figure "thinking" in connection with payrolls, cost sheets, chain discounts, warpage, fillage, inventories, invoices, etc.

An Extra Set of Brains—
An Extra Set of Eyes—

For *Everyone* in Your Office

AN extra set of brains—when the Monroe multiplies, or divides, or subtracts, or adds—and every operation can be done with equal ease—the Monroe finds the result for you by the direct method from problem to answer.

You don't have to un-learn time-tested methods of figuring; you don't have to learn any new methods. You simply put your problem up to the Monroe by "writing" the problem on the machine; the Monroe assumes the rest of the burden for you—an extra set of brains thinks out the answer for you—with remarkable rapidity and with absolute accuracy.

And you're CERTAIN the answer is right!

AN extra set of eyes keeps vigil over the work all the time guarding against the contingency of an operator's error. That is the visible check feature of the Monroe, which enables you to prove your work as you proceed, and insures you the correct answer at the end.

In every textile mill, on all kinds of figure-work in the office or in the mill, let the Monroe do the brain work of your figuring problems. The "Book of Facts" will show you how the Monroe does it. Simply send along the coupon for your copy—no cost or obligation.

MONROE
REG. U. S. PAT. OFF.

Calculating Machine

Monroe Calculating Machine Co.
Woolworth Bldg., New York, N. Y.
Offices in Principal Cities

The "SHOW ME" Coupon—Mail it today

Monroe Calculating Machine Co., Woolworth Bldg., New York
Without obligation to us, send your "Book of Facts," showing how the Monroe will save time in the figure-work of our business.

Firm Name.....
Your Name.....
Address.....

Cotton 6-20

Wooden Packing Cases

All Styles

Manufactured from
Georgia Pine
White Pine
Poplar
Cypress
and Gum

The interlocking packing case, shown in the upper left-hand corner, has advantages over other packages, especially for carrying heavy materials. In the first place lighter weight material can be used in its construction on account of the interlocking reinforcement. It is harder to pilfer or break open than other packing cases.

We are now in position to give all orders for shooks prompt attention, and will be glad to quote prices and delivery dates on any cases you might require.

In addition to rectangular tanks, we manufacture a complete line of round tanks equipped with round iron hoops and malleable draw lugs.

All our tanks are manufactured from heart cypress tank stock and we guarantee them to hold water.

Your inquiry solicited.

Hightower Box & Tank Co.

Corner Humphreys and Glenn Streets

Box 1025 **Atlanta, Ga.**

What You Can Accomplish With Motion Pictures

The many applications of Motion Pictures to industrial needs furnish striking evidence of their tremendous scope. One manufacturer makes Motion Pictures a medium for the analysis of production operations; another uses them for the education and training of his employees by showing the many phases of the industry in which they are engaged. Still another will promote an amateur feature photoplay produced by the employee personnel. In many cases these same films are reassembled at small cost to be used for advertising and selling.

There is nothing difficult or complicated about Motion Pictures. Our organization is thoroughly experienced. We will discuss Motion Pictures intelligently. We never recommend our services where they cannot be profitably employed. This instructive booklet will be gladly mailed to executives engaged in the Textile Industry. Request it, and learn how Rothacker Motion Pictures will serve you profitably.

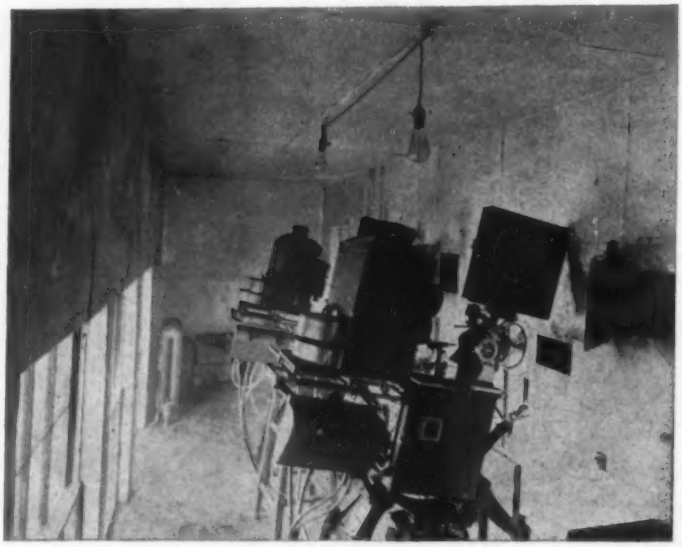
Consultation Without Obligation.

Rothacker FILM MFG. CO. CHICAGO U.S.A.

1343 Diversey Parkway
Chicago, Illinois

Eastern Industrial Division,
220 W. 42nd St., New York.

The Senior Specialists in Motion Picture Advertising



Showing Installation of Power's 6 B Motion Picture Machines in the Tucopou Mills Theatre

The Textile Industry Demands the Best

That is why—

More Power's Projectors are used by Cotton Mills in the South than all Projectors combined.

"We Have a Special Offer"

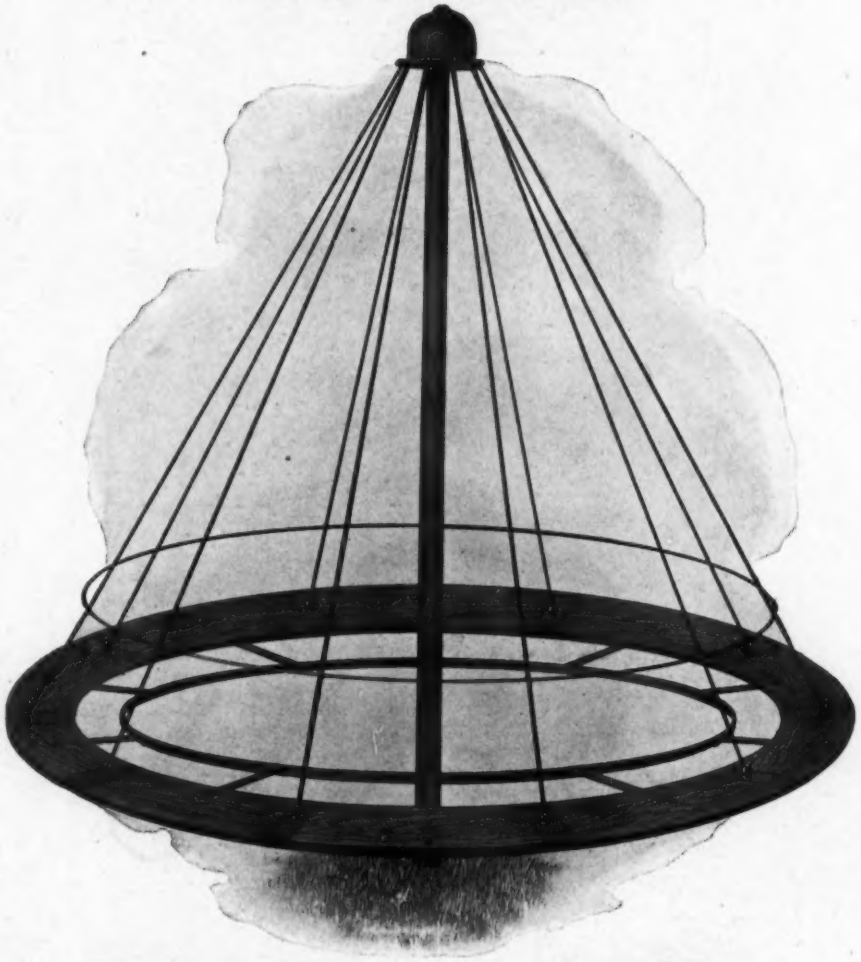
Our experience in Theatre equipment is at your service

Southern Theatre Equipment Company

No. Nine Nassau St.
ATLANTA, GEORGIA

Eighteen Fifteen Main St.
DALLAS, TEXAS

THE FUN FUL LINE
PLAYGROUND EQUIPMENT



Playground Days Are Here

The time has arrived for serious consideration of the needs of children in order to supply them with proper play facilities and keep them from seeking the dangerous streets.

There is no better medium for this purpose than a well regulated and properly equipped playground.

"Fun-Ful" **Playground Apparatus** is the product of several generations of expert mechanical skill and many years of experience in catering to the needs of children, with the result that we are now supplying Fun-Ful apparatus to all who demand the best to be had in this equipment.

Illustrated is the new Improved **Fun-Ful Ocean Wave**, which affords a wonderful amount of healthful, exhilarating play, with absolutely no danger. The motion is a rotating and undulating movement combined, and children of all ages are very enthusiastic about it.

Your attention is called to these exclusive Fun-Ful features of the Ocean Wave. Improved ball and socket head, assuring perfect lubrication. Protective Guard Rail. Secondary Circle preventing wooden circle from striking center post. Eye Bolt attachments, passing through steel plates, support rods to circle, and assure flexibility, also minimize danger of breaking, due to lateral strain.

The Fun-Ful Ocean Wave was favorably commented on by the International Recreation Congress recently, and we highly recommend its adaptability for both boys and girls.

We can offer no better suggestion than an Ocean Wave as a nucleus for a well regulated and equipped playground, and recommend you do not fail to include at least one of these in your order.

We Have
"EVERYTHING FOR THE PLAYGROUND"
Including
SWINGS, SEE-SAWS, GIANT STRIDES, SLIDES, GYMNASIUM COMBINATIONS.
Write us for catalog today.

HILL STANDARD CO.

General Sales Office,
Conway Building,
Chicago, Ill.

Factories:
Kokomo, Ind.
Anderson, Ind.

HELP *your* HELP

and they will satisfy you

Provide Proper Recreation

---billiards and bowling
a clean sport

To exercise RIGHTLY *Means To PLAY!*

Bowling is the sport where you can PLAY and EXERCISE any old time —and regardless of the weather.

Let us Advise and Assist YOU in Providing

Recreation

that will
Keep YOU and YOUR EMPLOYEES

Physically Fit

Write for full information.

The Brunswick-Balke-Collender Co.

623-633 South Wabash Avenue
CHICAGO, ILLINOIS

Branches in All Cities

BILLIARDS BOWLING

F. H. Thomas Company, Boston, Mass.

A First Aid Room or an Emergency Hospital for your Employees will

Decrease your liability for industrial accidents.

Decrease time lost through temporary incapacity of your workers.

Decrease needless suffering from minor injuries and prevent minor injuries from developing into serious cases.

Increase morale and loyalty among your employees and give you opportunity to show your interest in the welfare of your workers.

The F. H. Thomas Company has equipped First Aid Rooms for over four hundred factories and mills, who have appreciated these facts, including the following Southern mills: WHITNEY MILLS, WHITNEY, S. C.—WATEREE MILL S, CAMDEN, S. C.—WINDSON MILLS, WINSBORO, S. C.

A modern Thomas equipped emergency room will put you also among the progressive owners who are saving money and advancing the conditions of their workers.

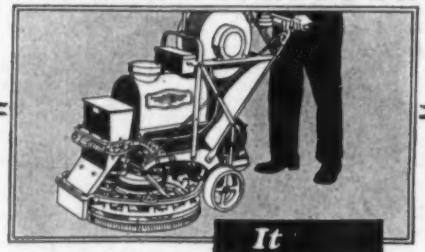
Write for information and advice, stating, if possible, the number and nature of your accidents.

SOUTHERN REPRESENTATIVE

F. H. THOMAS COMPANY

689-691 Boylston Street - Boston, Mass.

FINNELL SCRUBBER



It SCRUBS Electrically!

The Growing Need for

CLEAN FLOORS

in American Business

Clean floors! Clean floors! Clean floors!

'Tis the cry of Efficiency, echoing through the halls of industry.

From out the homes of civilization, where floors are babies' playgrounds, comes the realization that cleanliness is essential to *all* humanity—everywhere, at all times.

In business, CLEAN FLOORS are now known to mean clean work and better work, happier workers and greater production.

"A clean mind and a clean body" applies with equal force to the human and to the business unit. CLEAN FLOORS influence both mind and body.

The factory worker, the store employee, the office building tenant—each attains his highest efficiency when surroundings are most cheerful. Without CLEAN FLOORS cheerfulness is handicapped.

Until nine years ago business could not afford the expense of "home grade" cleanliness. Then came the Finnell System of Power Scrubbing. It provided the means of equalling, or even surpassing, the home standard.

Today, in more than a hundred lines of industry, Finnell-scrubbed CLEAN FLOORS are proving their beneficial effect on business.

Note the CLEAN FLOORS wherever you go. You can judge a business by its floors, for "clean floors reflect clean business."

Information cheerfully given without obligation to you. Address Chicago office.

FINNELL SCRUBBER
is now used in many
Auditoriums
Bakeries
Banks
Bottling Works
Candy Factories
Churches
Colleges
Department Stores
Factories (Miscellaneous)
Food Products Factories
Halls
Hospitals
Hotels
Knitting Mills
Public Buildings
Restaurants
Retail Stores
Schools
Textile Mills
Wholesale Groceries
Y. M. C. A.'s
and miscellaneous buildings

Names furnished on request. State which class interests you.

AMERICAN SCRUBBING EQUIPMENT CO.

Also manufacturers of Finola Scouring Powder

General Offices: 188 N. Wabash Ave., Chicago Factories: Hannibal, Mo.

DISTRICT OFFICES

ATLANTA	BUFFALO	DENVER	LOS ANGELES	NEWARK	PHILADELPHIA	SALT LAKE CITY
BALTIMORE	CHICAGO	DETROIT	LOUISVILLE	NEW ORLEANS	PITTSBURGH	SAN FRANCISCO
BOSTON	CINCINNATI	INDIANAPOLIS	MILWAUKEE	NEW YORK	PROVIDENCE	SEATTLE
	CLEVELAND	KANSAS CITY	MINNEAPOLIS	OMAHA	ST. LOUIS	

"CLEAN FLOORS Reflect Clean Business"

FINNELL SYSTEM

OF POWER SCRUBBING

The First and Last Step in Transportation

From production to final use every piece of merchandise passes through several stages of transportation. You may not be able to effectively hasten steamship, rail or motor shipments but you can speed up truck moving by adopting a method that eliminates needless waste of time, effort and labor costs.

The McKinney One-Man Truck Service expedites shipments because it permits every truckman to do his work unassisted, with less effort and in half the time required with any other hand operated truck.

Notice the McKinney One-Man Truck in the illustration above. The long steel package holder gripping the barrel does the work the extra helper used to do. *It picks up the load.* All the truckman has to do is to move his truck up to the box, bale or barrel; throw the package holder over the load, put his foot on the pedal down near the bottom of the shaft, pull back on the handle and the merchandise is on its way.

McKinney One-Man Trucks are of light rugged construction, easily operated and suitable for handling any kind of merchandise under the most difficult trucking conditions.

The McKinney One-Man Truck Service has been successfully operated by many of the country's leading concerns for twenty-five years, yet it is the most up-to-date because no other can approach it for speed, time, labor and effort saving qualities.

Our illustrated catalog, "The One-Man Method" will answer your particular trucking problem. Send us your name and address and we will forward you a copy of this interesting booklet.

McKinney Manufacturing Co.
Pittsburgh
THE LOVINGOOD COMPANY
14 WALKER STREET, ATLANTA, GA.

Also manufacturers of McKinney Hinges and Butts, garage and farm building door-hardware and furniture hardware

McKINNEY *one-man* TRUCKS

Muscle or Machinery?

Which method in these times of high labor costs are you using to secure greater production in your plant, mill or factory?

Today the hand-trucker is as obsolete as the horse drawn street car. In practically every industry, at steamship and railroad terminals, materials are moved quickly and cheaply by

Industrial Trucks, Tractors and Locomotives

equipped with

Edison Storage Batteries

In any service you can depend on Edison equipped Trucks, Tractors and Locomotives to stand up under the hardest work.

The all **steel** and **iron** construction and the **alkaline** solution of the Edison is a sure guarantee of the greatest number of work days from your equipment.

Do you want maximum efficiency with lowest cost? Let us show you what Edison equipped Trucks, Tractors and Locomotives will do for you. Write for Bulletin 600-AD TODAY.

Edison Storage Battery Co.

Factory and Main Office: Orange, N. J.

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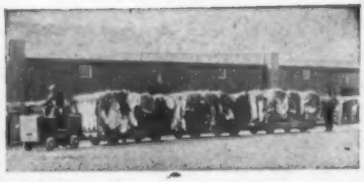
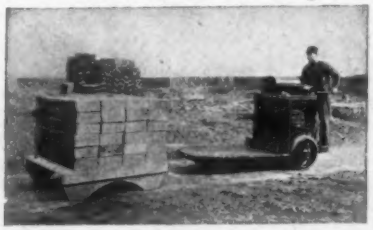


The storage battery tractor does the work of many hand-truckers, and does it quicker, better and cheaper. It is speedy, efficient, tireless.



The elevating platform truck picks up its load and departs. Indispensable for rapid handling of pieces in quantity production.

Old-time methods of handling ashes, coal, gravel, etc., are being replaced by storage battery locomotives.

10 TO ONE

That's The Big Saving

Have you ever stopped to figure how much the trucking of your raw cotton and cotton fabrics costs you? Have you?

Well, You'd Be Amazed

if you figured it up, and then made a comparison with the cost for the same trucking on an Elwell-Parker Electric Truck.

One man with an Elwell-Parker Truck will haul ten times the goods, at twice the speed he previously moved on a hand truck.

Quicker Haulage Methods Mean Greater Mill Production

Better transportation—quicker transportation—between departments, at shipping platform or boiler house, handling fuel and ashes, is essential for the maximum of speed at your mill.

The Elwell-Parker Electric Truck is the truck for close quarters; can be operated after an hour's practice; 15 to 20 miles on one battery charge.

Constructed of steel—capacity up to two tons.

Write for catalogue and information.

The Elwell-Parker Electric Co.

Pioneer Builders of Electric Industrial Trucks

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New York
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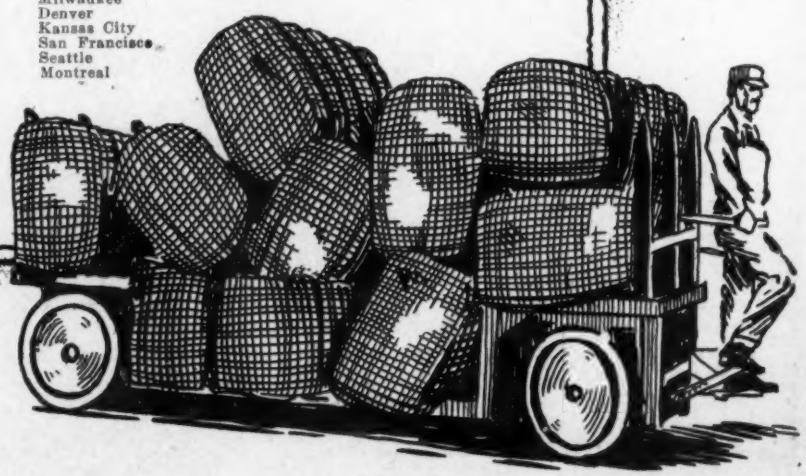


Roll Call

of White Trucks *in the* Textile Industry

EACH year there is a steady, substantial increase in the number of White Trucks operated in the Textile Industry. Each year more Textile Manufacturers are convinced that White Trucks are most durable, dependable and economical, that they do the most work for the least money.

The following list of representative Textile Manufacturers operate a total of 204 White Trucks

American Woolen Co.	Lawrence, Mass.	Thomas Kitson & Son, Inc.	Stroudsburg, Pa.
Amoskeag Manufacturing Co.	Manchester, N. H.	B. B. & R. Knight	Manchaug, Mass.
Arlington Mills	Lawrence, Mass.	B. B. & R. Knight	Providence, R. I.
Ashworth Bros., Inc.	Fall River, Mass.	Louis Kraemer & Co.	Stony Creek, Pa.
Atlanta Woolen Mills, Inc.	Atlanta, Ga.	Krout & Fite Manufacturing Co.	Philadelphia, Pa.
The Augusta Factory	Augusta, Ga.	Lancaster Mills	Clinton, Mass.
Avondale Mills	Birmingham, Ala.	Massachusetts Cotton Mills	Lindale, Ga.
Joseph Bancroft & Sons Co.	Wilmington, Del.	Monarch Mills, Inc.	Lockhart, S. C.
The Beckman Co.	Cleveland, Ohio	Monarch Mills, Inc.	Union, S. C.
Bibb Manufacturing Co.	Macon, Ga.	Narrow Fabric Co.	Reading, Pa.
Brookford Mills Co.	Hickory, N. C.	Norwich Knitting Co.	Norwich, N. Y.
Cannon Manufacturing Co.	Concord, N. C.	Pacific Mills	Columbia, S. C.
Chadwick-Hoskins Co.	Charlotte, N. C.	Pacific Mills	Lawrence, Mass.
Wm. B. Chant & Son	Port Jervis, N. Y.	Phoenix Silk Manufacturing Co.	New York City
Cheney Bros.	South Manchester, Conn.	The Phoenix Woolen Co.	Stafford Springs, Conn.
Cleveland-Akron Bag Co.	Cleveland, Ohio	Piedmont Manufacturing Co.	Piedmont, S. C.
Cleveland Worsted Mills Co.	Cleveland, Ohio	Piedmont Silk Co., Inc.	Chambersburg, Pa.
Conestee Mills	Conestee, S. C.	The Rich-Sampliner Co.	Cleveland, Ohio
Conestee Mills	Greenville, S. C.	Riverside & Dan River Cotton Mills	Danville, Va.
Crompton Company	Providence, R. I.	Rockland Webbing Co.	Rockland, Mass.
Dwight Manufacturing Co.	Birmingham, Ala.	Russell Manufacturing Co.	New York City
Earlston Worsted Mills, Inc.	Greenville, R. I.	A. H. Sands & Co.	New York City
Ellis Cotton Co.	Atlanta, Ga.	E. D. Sassoon & Co.	Bombay, India
A. D. Ellis & Sons	Monson, Mass.	Sherman Manufacturing Co.	Sherman, Texas
Eva Jane Mills	Sylacauga, Ala.	R. & H. Simon Silk Co.	Easton, Pa.
Everlastic, Inc.	Chelsea, Mass.	Southern Manufacturing Co.	Athens, Ga.
Geo. M. Finn	Syracuse, N. Y.	Springfield Cotton Mills	Laurel Hill, N. C.
Fonda Glove Lining Co.	Fonda, N. Y.	Stark Mills	Manchester, N. H.
Georgia Cotton Mills, Inc.	Atlanta, Ga.	J. L. Stifel & Sons	Wheeling, W. Va.
The Groveland Mills	Groveland, Mass.	Utica Steam & Mohawk Valley Cotton Mills	Utica, N. Y.
Haas Brothers	New York City	Virginia Cotton Mills	Swepsonville, N. C.
Hamilton Woolen Co.	Boston, Mass.	The Viscose Co.	Marcus Hook, Pa.
Louis E. Harrower & Son	Amsterdam, N. Y.	Wamsutta Mills	New Bedford, Mass.
Heinsheimer Bros.	New York City	Wateree Mills, Inc.	Camden, S. C.
Highland Park Manufacturing Co.	Rock Hill, S. C.	Weiner Bros.	New York City
Samuel Hird & Sons, Inc.	Passaic, N. J.	West Point Manufacturing Co.	West Point, Ga.
Indian Bleaching, Dyeing & Prtg. Works	Bombay, India	White Haven Silk Co.	White Haven, Pa.
Kayser Silk Co.	Sherburne, N. Y.	White-Williamson Co.	Burlington, N. C.
Killingly Manufacturing Co.	Killingly, Conn.	Jas. N. Williamson & Sons Co.	Burlington, N. C.

There are now in actual service 3,691 White Fleets, comprising 40,919 trucks, exclusive of single truck installations.

THE WHITE COMPANY
CLEVELAND

34-inch Heart Brand three-ply belt in use at the plant of the Fredonia Portland Cement Co., Fredonia, Kansas.

An Easy Way to Save Money

A product which doesn't conform to exact specifications can't pass inspection in its own factory. A fraction off standard measurement will condemn an expensively made mechanism.

Although manufacturers are jealous in the inspection of their own products, they are losing dollars because they have not applied the same rule to the transmission of power in their factories. It's a losing game to let the eye, or guesswork, judge the efficiency of a belt's work. That is an engineering matter for a belting expert.

The Graton & Knight Standardized Series of Leather Belting, which contains the *one right* kind and size of belt for every class of drive, is a series standardized in its manufacture and in its application.

High quality leather belting put to work on an exact engineering basis means the highest economy in power transmission.

Graton & Knight belting experts will be glad to extend their services to any belt user who questions the present efficiency of his power transmission. G & K experts are men trained in the G & K laboratories and by long service in the field.

Write for our book, "Standardized Leather Belting"

THE GRATON & KNIGHT MFG. COMPANY, Worcester, Mass., U. S. A.

Oak Leather Tanners, Makers of Leather Belting and Leather Products

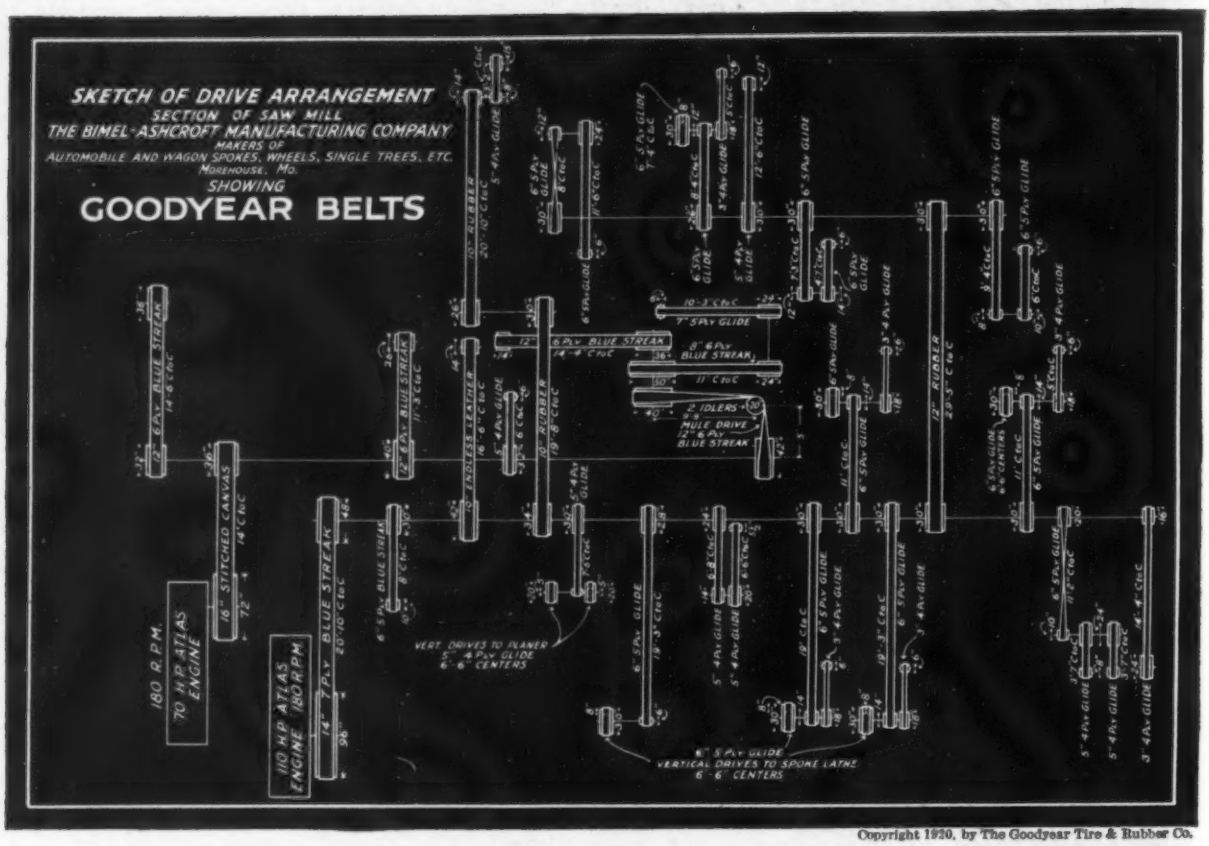
Branches and Distributors in All Principal Cities

Graton & Knight

Standardized Series

Leather Belting

Tanned by us for belting use



Copyright 1920, by The Goodyear Tire & Rubber Co.

An Order, Two Plants—and the G. T. M.

The first time the G. T. M.—Goodyear Technical Man—talked with this Company that today has two plants practically standardized on Goodyear Belts he virtually declined an order. He had an opportunity to sell a belt of the same dimensions as the one which had just worn out after a short term of unsatisfactory service. Instead, he took the larger opportunity of demonstrating the value of an expert study of belting quality and working conditions.

The Bimel-Ashcroft Manufacturing Company had been having costly trouble with a 14-inch, 5-ply belt on the main drive in their Morehouse, Mo., plant. Time after time they had had to cut it because it had stretched. Every cut meant a shutdown of the main drive, involving heavy loss of production. When, finally, the stretch was eliminated, the rawhide lacings began to break, the lacing holes pulled out, and the belt began to open at the plies. So they decided to get a new belt, and told the G. T. M. to send on one of his 14-inch, 5-ply belts.

"Let me recommend a 14-inch, 7-ply Goodyear Blue Streak," said the G. T. M. "Your drive calls for a stronger belt than you have been using. Among the drive factors affecting the belt is a starting load 50% heavier than the running load." He went on to show how his analysis included every factor of power, pulley dimensions, and general service conditions. His recommendation finally was accepted on the strength of what he showed he had learned about that drive.

The Goodyear Blue Streak's success not only put an end to the main drive troubles but opened the way for analyses of the entire plants of the Bimel-Ashcroft Company at both Morehouse and Poplar Bluff. Today, two and a half years after the G. T. M.'s study of that one drive, 82 of the hundred belts in the Morehouse mills are Goodyear, and so are 50% of those in the plant at Poplar Bluff. As fast as any other kind of belt gives up a job, a Goodyear Belt, G. T. M.-specified to its work, takes its place.

In the racking service of the high speed saws and lathes, Goodyear Glide Belts serve the tools; on the heavier drives of the bolting saws and the heading saws, Goodyear Blue Streak Belts withstand the severe duty with an inbuilt strength. These belts vary in length and width and plies and type of construction, but they are uniform in the quality that repays their slightly greater first cost with an ultimate operating economy. They deliver full power, hold the pulleys in a friction-surface grip, hold at the plies and wear both evenly and long.

The G. T. M. is at your service. If his recommendations prove valuable to you, our return will be increased, as it has been in this instance, by your satisfaction and the good word you will pass on to your fellow manufacturers. For further information about the G. T. M.'s method, and about the belts which Goodyear builds with the care implied in the command, "Protect our good name," write to The Goodyear Tire & Rubber Company, Akron, Ohio.

BELTING · PACKING HOSE · VALVES

GOODYEAR

Even if Fuel Didn't Cost Anything In Your Plant

--that would not be sufficient reason for continuing the use of ordinary hangers equipped with friction-producing plain bearings.

For, in addition to wasting fuel by destroying at least 25% of your power, hangers with plain bearings demand frequent renewals, require heavier belting, have an unusually high maintenance cost, and are very wasteful of lubrication.

You can largely eliminate the many losses due to plain bearings and make a dividend paying investment by installing S K F BALL BEARING HANGERS. They permit the shaft to ride almost frictionless not only when well aligned but under extreme conditions of misalignment. The inner race tilts with the shaft—the bearing can never bind.

Because they are practically wear free, S K F Ball Bearing Hangers, besides saving a large percentage of your power, have a much longer life, a lower maintenance cost, and save materially in lubrication.

S K F INDUSTRIES, INCORPORATED
Sales, Service and Research Division
165 Broadway, New York

592

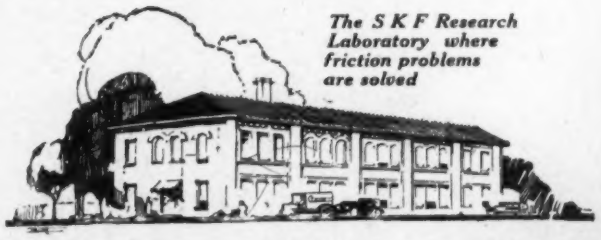
SKF INDUSTRIES

Hess-Bright Ball Bearings
S K F Ball Bearings
Atlas Steel Balls
Gronkvist Chucks
Transmission Hangers

A SERVICE THAT CONTEMPLATES MORE THAN THE SALE OF A BEARING.

Every S K F Industries service-salesman is a plant engineer, equipped to consult on your power transmission problems. S K F Service made available through these men is built on a laboratory-backed ideal that seeks to increase American output by lifting the friction load from industrial machinery.

Manufacturers are invited to avail themselves of this freely offered cooperation.



The S K F Research Laboratory where friction problems are solved

The Cheapest Belt

is the belt that lasts longest; the belt that's made right. Over 75 years ago we started making COCHECO Belting, set our standard of quality, and have kept it uniform ever since. There are COCHECO Belts now in use that are more than twenty years old—and they're still a long way from worn out. We take big heavy butts, cut out the choice center parts and put them into COCHECO Belting—guaranteed.

No belting sold closer to cost—none more economical to use. Let us show you.

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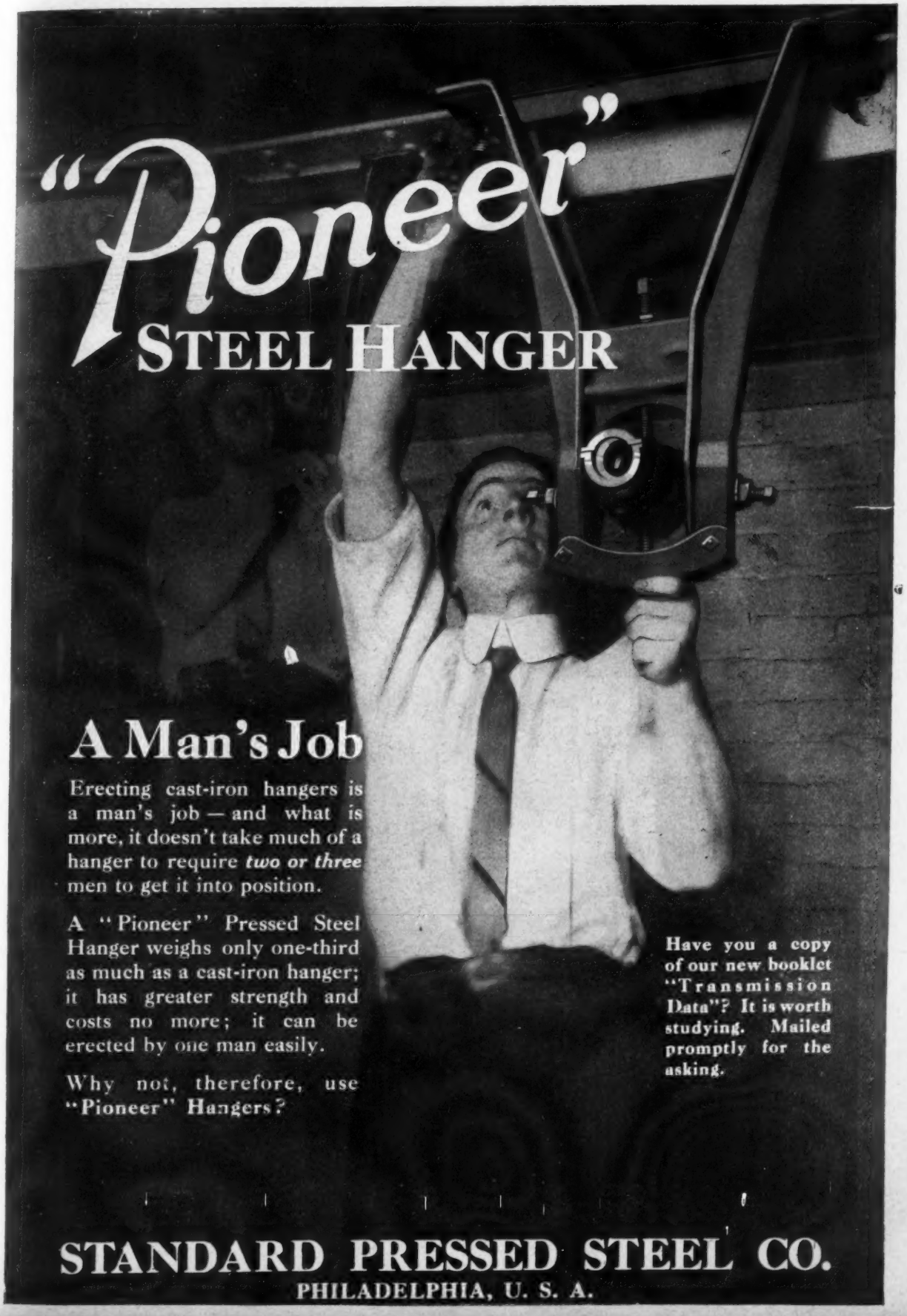
BOSTON, MASS., 157 Summer St. NEW YORK, N. Y., 71-73 Murray St. CHICAGO, ILL., 14-16 N. Franklin St.



"Pioneer"
STEEL HANGER

A Man's Job

Erecting cast-iron hangers is a man's job — and what is more, it doesn't take much of a hanger to require *two or three* men to get it into position.

A "Pioneer" Pressed Steel Hanger weighs only one-third as much as a cast-iron hanger; it has greater strength and costs no more; it can be erected by one man easily.

Why not, therefore, use "Pioneer" Hangers?

Have you a copy of our new booklet "Transmission Data"? It is worth studying. Mailed promptly for the asking.

STANDARD PRESSED STEEL CO.
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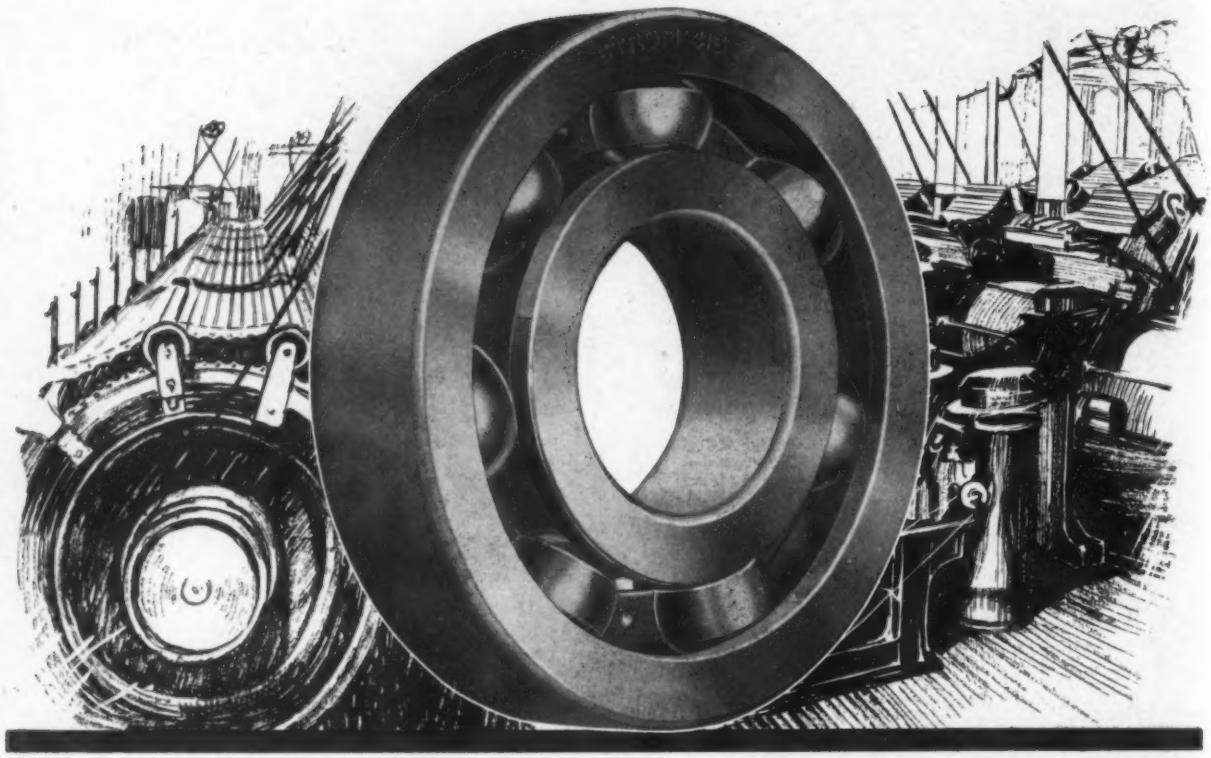

Strom Bearings Improve Quality of Work

The experience of users of Strom bearings in the textile industry is that they improve materially the quality of the mill's production.

By practically eliminating friction, they permit an evenness and accuracy of machine work.

Once installed they require little attention and so save materially in time and labor. They increase power and reduce its cost. They save oil and confine it all to the boxes. They effect marked reductions in operation costs.

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U. S. BALL BEARING MFG. COMPANY
(Conrad Patent Licensee)
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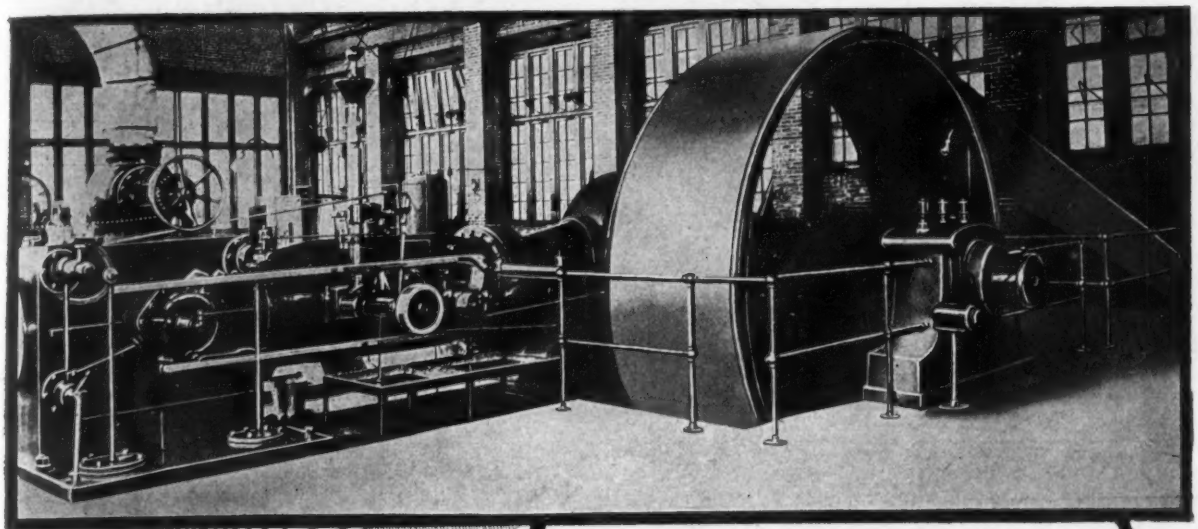
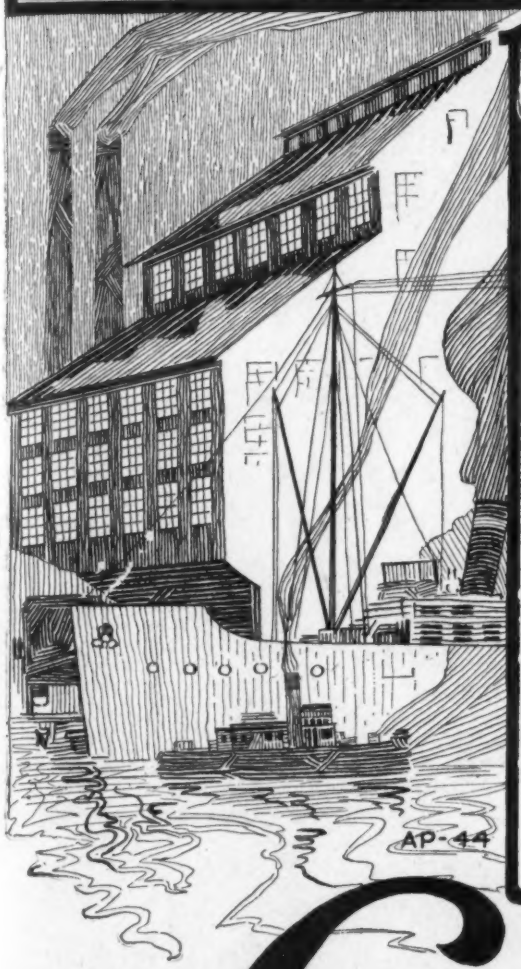
Strom BEARINGS





WHEN you're thinking about the cost of a belt, think also about the cost of a break-down on the drive that belt is intended for. If the price that is a little higher for the belt that is a little better, buys you security against one break-down—wouldn't that little price difference be a mighty good investment? Ladew Leather Belts are not indestructible—but they do have a tremendous reserve of resistance not found in belts less carefully, less conscientiously, built. And—Ladew engineers are always ready to recommend the right belt for each of your drives. You have only to ask.

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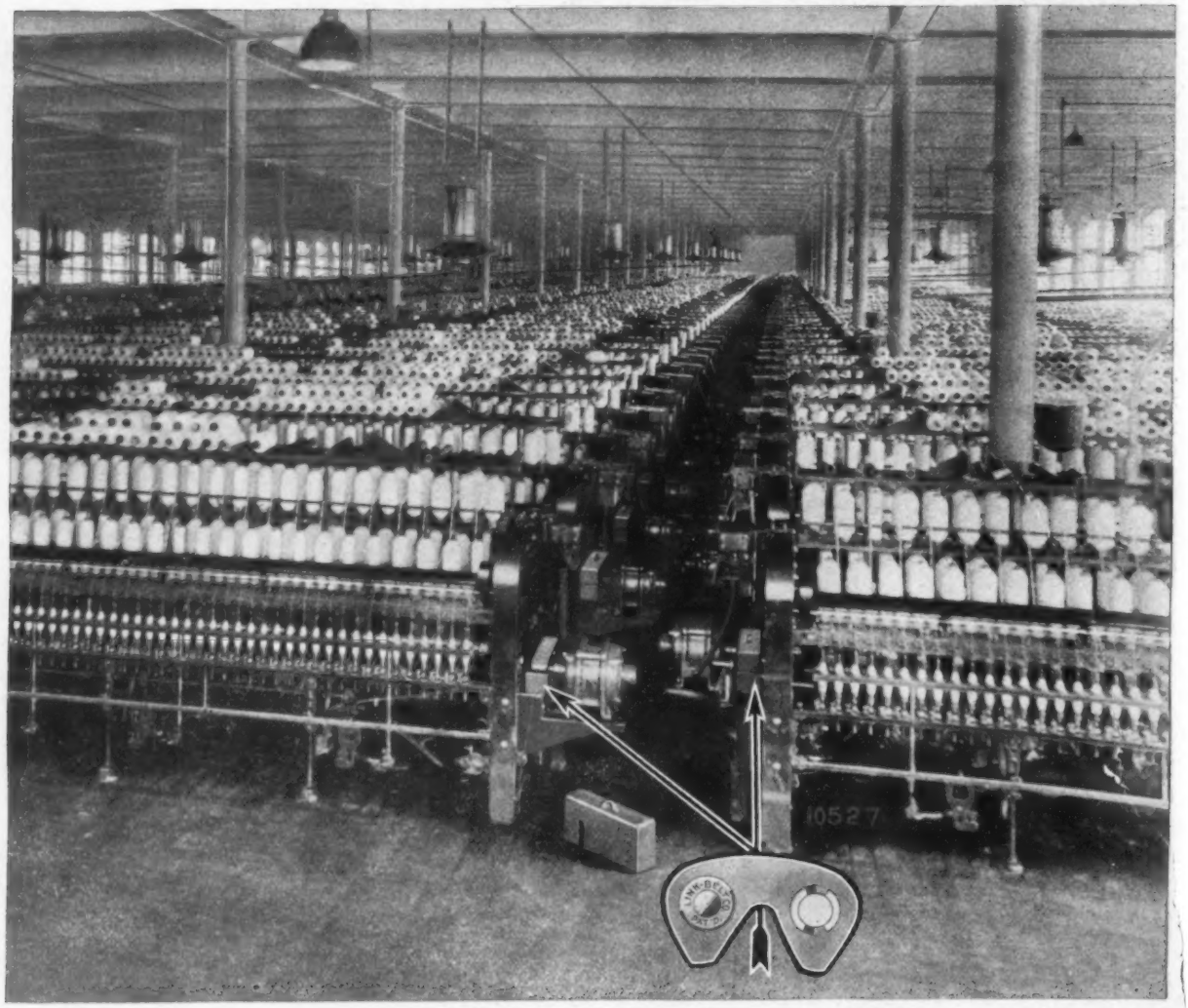
254 Link-Belt Silent Chain Drives

Operating Spinning Frames, Pacolet Mfg. Co., New Holland, Ga.



NOTE the good general appearance of the room—no long, flapping, dangerous belts. The result is 98.2% guaranteed efficiency in the transmission of power to each spinning frame. Link-Belt Casings make for safety and continuous lubrication.

Let one of our experienced textile power transmission specialists explain the effectiveness of transmitting power thru Link-Belt Silent Chain Drives.

LINK-BELT COMPANY 517

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The World's Greatest Belt Lacing

An Economy In Modern Equipment

In every service where belting is used, and on every kind of leather, cotton, rubber or balata belt, Alligator Steel Belt Lacing has shown its unquestioned supremacy in economy and adaptability during the last eleven years. Let it aid from now on in helping you too.

"Never Lets Go"

"Nothing Needed But a Hammer"

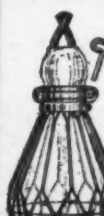
ALLIGATOR

TRADE MARK REG. U.S. PAT. OFFICE

STEEL BELT LACING

Think of it, in a working time of only three minutes the average belt can be laced with Alligator Steel Belt Lacing. No special skill or training needed. No tool but a hammer to insure a perfect joint. Compare this saving in help, time and money over other methods of lacing. Alligator Steel Belt Lacing also saves the belting. The pull comes against the edge of the teeth and not the flat. Leather belting is not weakened nor the fabric belts injured as with other lacings by cutting the long threads which carry the "pull." Replacements even in hardest use are practically unknown.

FLEXCO-LOK STEEL LAMP GUARDS



Protects Lamps from breakage and theft—property from fire. An efficient, inexpensive security against danger, losses and delays.

A mechanically perfect guard made in all styles and sizes with reflectors and handles if desired. Patent lock prevents theft. Sold at a distinct economy to the purchaser. Check Flexco Lok guards on coupon. Not in stock, London.

A Large Surplus of Strength

Note the **double staggered teeth** (shown in illustration)—they give the extra strength to Alligator lacing. See how the long end teeth pierce the belt and are "clinched" tightly with the hammer. The result is that Alligator Steel Belt Lacing has proven time after time the strongest lacing in the world. **There is no stronger lacing known.**

Best for Every Service

Everywhere in Industry, where belting is required—whether Manufacturing, Agriculture, Lumbering, Mining or Milling, Alligator Steel Belt Lacing is known and is preferred by all who know it.

The short flexible joint insures smoothness of operation. One very important feature is the Sectional Steel Rocker Hinge Pins (patented)—special steel rods with lugs spaced to correspond to sections in the lacing. Lugs hold them in place and oval faces form frictionless "rocker" for the flexible joint. In damp or heavy work, where other lacings pull out, Alligator Steel Belt Lacing holds.

Ask Your Jobber— or Write Now for Prices, Samples and Full Details

Write today—or use the coupon. Let us quote you prices and send samples and full details regarding Alligator Steel Belt Lacing. Made for belts of all sizes from tape to ⅝ inch thickness.

Hundreds of thousands of men the world over are now recommending and using no other lacing than Alligator—The World's Greatest Belt Lacing. It will be a big saving, a great discovery—a wonderful convenience for you. Use the coupon. Tear it off now. Write us at once.

Send This Coupon

Flexible Steel Lacing Company
530 S. Clinton Street, CHICAGO

Gentlemen—Kindly send price lists, sample and complete details of Alligator Steel Belt Lacing. Also send prices and descriptions of Flexco

Lok Lamp Guards..... (Check if Desired)

Firm Name.....

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(Tear this Coupon Out—Send It Today)

FLEXIBLE STEEL LACING COMPANY

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"Niagara" Brass Grease Cup

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"Standardizing on Sherwood Specialties Reduces Our Work"

These engineers know that success in building steam engines, locomotives, and myriads of mechanical things comes from standardization—and they utilize this knowledge when selecting engineering specialties.

Consequently, it is only natural that these engineers select engineering specialties which embody the improvements of twenty-five years experience. They back their judgment by standardizing on Sherwood.

And their impressive experience with Hart Oil Pumps, Sherwood Injectors, and Eagle Ejectors has made them ardent advocates of the entire Sherwood list.

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Want to Reduce Your Overhead?

It may be impossible for you to

reduce wages—cost of raw material—buy new machinery with greater production capacity.

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reduce time required for oiling, lessen Power Consumption, save material from oil stains, get the most out of all your machinery

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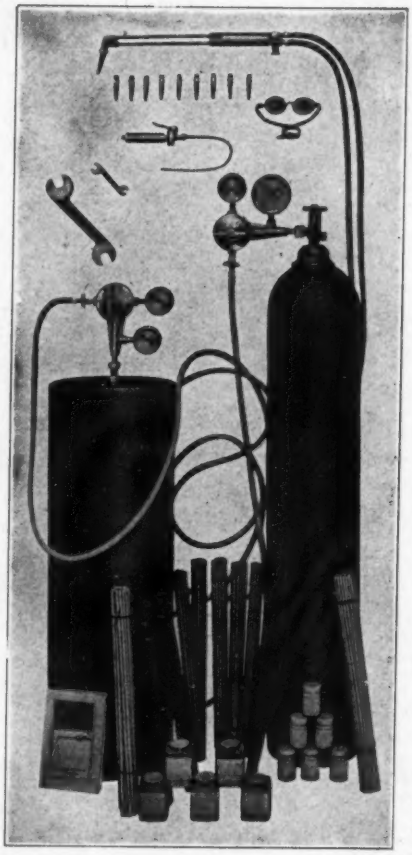
WATERHOUSE

Oxy-Acetylene Cutting and Welding Outfits

All Waterhouse products are built on the idea that the very best workmanship and material make a product which in the end is the cheapest.



All Waterhouse products are built on the idea that the very best workmanship and material make a product which in the end is the cheapest.

NO TEXTILE MILL can afford to be without a WATERHOUSE Welding Equipment. It often pays for itself on a single job. Having a WATERHOUSE Welder is like having a complete stock of new parts, for any broken part may be made as good as new in a short time. No delay while new parts are coming from the factory; no money tied up in spare parts. It is making and saving in many mills; put it to making and saving for you.

WATERHOUSE WELDING COMPANY

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Cozy-Attractive-Economical Homes

for Industrial Villages

Manufactured in large quantities, after patented methods. Especially adapted to industrial villages. Used by many of the largest corporations.

Thoroughly substantial. Costs less than half the ordinary house. Quickly erected. Absolutely guaranteed.

Saves architect's, contractor's, lumber dealer's and jobber's superfluous profits. Cost of manufacture and erection cut in half.

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"Excellent Satisfaction"-The Cleveland-Cliffs Iron Co.

Aladdin Readi-Cut Houses universally give satisfaction. The most difficult industrial housing problem can be simplified and solved by the Aladdin method and without the slightest slip or hitch.

It is customary in the Logan Field for the mining company to furnish housing for the employees. Therefore at the Ethel Mines, the Cleveland-Cliffs Iron Company had the usual precedent to follow. Their housing problems were solved with Aladdin Readi-Cut Houses, regarding which they write,

"We shall be pleased to have you use our name as reference, as the houses which we have already purchased from you have given us very excellent satisfaction. As our operations expand more houses will be necessary."

This is but one of the many instances where the Aladdin service has solved the housing problem. Better houses, lower in price, more quickly erected. these are the expressions of satisfaction we hear from every customer.

Aladdin—

—expedites your building project—
—houses your men well and quickly—
—saves 18% of the cost of lumber—
—saves 30% of the labor cost—
—reduces the skilled labor required—
—guarantees complete shipment of materiai—
—guarantees the quality—
—carries material for 1000 houses in stock—
—ships from the nearest timber region—

—quotes definite prices on any order from one house up to a city of 3000, including churches, schools, offices, water and sewage systems, electric plants, street and house lights, heating plants, street parks, trees, lawns, etc., complete.

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Mercantile and Industrial Buildings of CONCRETE *Mean—*

Fireproof, permanent, practically maintenance-free structures.

Freedom from vibration, greater load carrying capacity and reserve strength.

Speed of construction, regardless of season.

Well lighted, clean, healthful surroundings—helping to make contented workers, who increase production.

First cost is practically the only cost.

Low insurance cost.

You'll be interested in our new booklet "Mercantile and Industrial Buildings of Concrete." Just ask our nearest District Office to send you a copy.

Reinforced Concrete Loft Building, Hoboken Land & Improvement Company, Hoboken, N. J.

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A FEW FACTS TO THOSE CONTEMPLATING BUILDING

It was twenty-one years after the Civil War before building costs came back to pre-war levels; so that if they ever come back it looks as though we have twenty years to wait.

Building costs have gone up about One hundred per cent in the past five years. The rest of the H.C.L., food, clothes, etc., have increased about One hundred and seventy per cent; so your dollar today will buy more building than anything else.

Are building costs coming down? Not much, at least, for several years.

We need in the United States more buildings than can be met by present production of materials in the next ten years. We need hundreds of thousands of new houses—all the buildings necessary to supply increased community needs—everywhere that there is a call for increased production—there must be more building.

It is estimated, that at the present time, there are only 100 houses for every 120 families in the United States and it is claimed that with a normal increase in the population in the next five years, there will be only 100 houses for every 130 families in 1925; so you see it will take some time to supply this universal demand for increased housing facilities.

Our organization is in a position to handle ANY KIND OF A BUILDING PROPOSITION. We have devoted a lifetime to the study of industrial building which includes homes for employees of large industrial concerns and housing industrial enterprises.

FOR THE YEAR 1920, WE HAVE OVER ($12,000,000) TWELVE MILLION DOLLARS WORTH OF BUILDING UNDER CONSTRUCTION, which includes housing developments, mills, factories, warehouses, power stations, etc., in New England.

OUR ACTIVITIES COVER A WIDE FIELD from building up towns and villages in industrial communities to the construction of industrial plants, power houses, mills, factories and warehouses, waterworks and sewerage systems.

OUR ADVICE AND SERVICE ARE YOURS FOR THE ASKING; backed by twenty years of practical experience in the service of industries.

P. J. DONAGHEY & CO.

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DIVIDE the definite quantity of steel available for bars into an excessive number of sizes (as is now done) and you can never be sure of quick delivery on quantities of **any particular size.**

REDUCE the number of sizes and you increase the stock of **every** size.

WE RECOMMEND THE EXCLUSIVE USE OF THESE SIZES:

⅜″ Round	½″ Round	½″ Square	⅝″ Round
¾″ Round	⅞″ Round	1″ Round	1″ Square
	1⅛″ Square	1¼″ Square	

Third Ave. Bridge, Minneapolis. Corrugated Bars Used

The Most Efficient Reinforcing Material for Concrete Construction

THIS Company has spent 27 years specializing in reinforced concrete work—devoted entirely to the designing of reinforced concrete structures and the development of the proper and most economical reinforcing materials.

The Corrugated Bar has a reliable, definite bonding value entirely independent of the condition of the surface. This makes it possible to design with a definite factor of safety. It eliminates uncertainty and permits the use of the full strength of the steel. Often less steel need be used.

The use of Corrugated Bars shop-fabricated saves time and reduces labor difficulties.

Full particulars on request.

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Corrugated Bars

ABERTHAW
CONSTRUCTION COMPANY
ATLANTA PETERS BUILDING

The finer grades of textiles are produced most successfully under the favorable conditions of modern plant and equipment.

ABERTHAW *has had a generation's experience in constructing to meet the exacting requirements of the greatest of New England Textile manufacturers.*

Hence, ABERTHAW *is the logical reliance of an industrial South that meets the challenge of the Best.*

"CLIENTS OF ABERTHAW" *names some of the corporations that have been served.*

FRUITS *of* EXPERIENCE

Built by ABERTHAW

MUCH traveling of the same road may mean the deeper wearing of a rut. Experience acquires value only through intelligent utilization.

¶ The mere fact that ABERTHAW has been building for twenty-five years is unimportant in comparison with the Company's searching analysis of its own operations day by day during each year of the twenty-five.

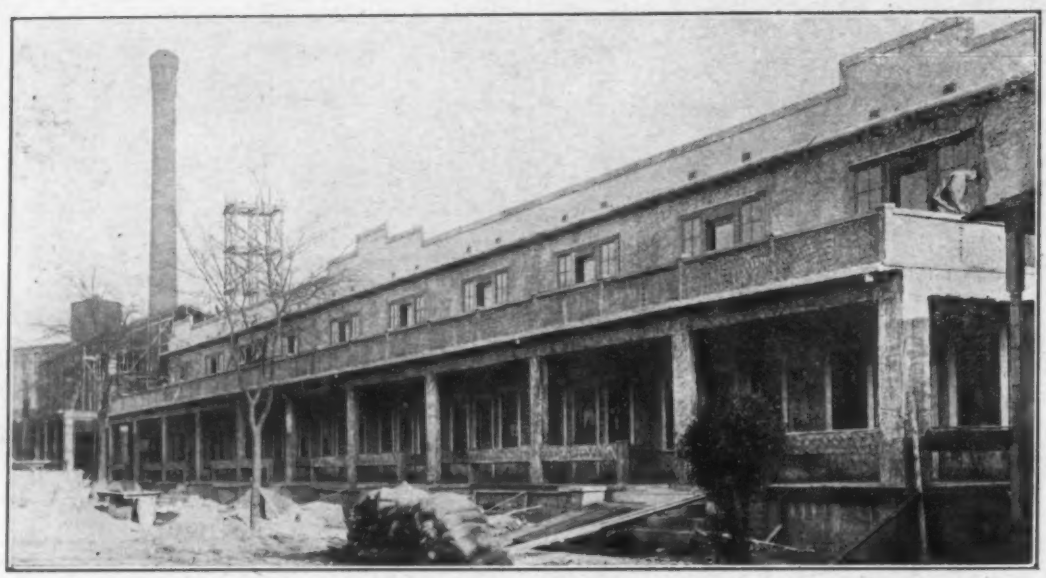
¶ On tabulated and analyzed results of past methods ABERTHAW bases the minutely devised plans for carrying out each new contract. These in turn are modified in the light of their functioning in the hard grind of actual practice.

¶ This consistent policy has developed a staff of building experts who have learned how to adjust the factors of material, labor and supervision with scientific exactitude for the achievement of ends fully foreseen and completely pre-arranged.

¶ Mastery such as this is the connotation of *Built by Aberthaw.*

ABERTHAW
CONSTRUCTION COMPANY
CONTRACTING ENGINEERS

BOSTON MASSACHUSETTS
ATLANTA PHILADELPHIA BUFFALO



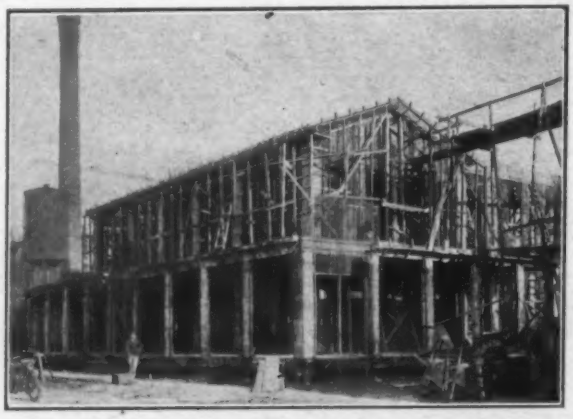
10-FAMILY APARTMENT HOUSE BUILT OF FORMLESS RE-INFORCED CONCRETE FOR AVONDALE MILLS

The Avondale Mills (Birmingham, Ala.) Again Show Their Faith in the *Permanence* and *Economy* of

ENSLEY BASIC SLAG

by using it in the three **reinforced concrete** structures shown on this page—a ten-family apartment house, a commodious Community House and a combination laundry and ice plant.

Other big cotton mills mindful of their employes' welfare have turned from frame to concrete construction for these real advantages—perfect sanitation, freedom from vermin and fire, freedom from repairs and replacements



Excerpts from report of City Building Inspector

"Test on floor on 10-family simplex house for Avondale Mills, Birmingham:

"The floor test is 16′ x 14′ clear span, a 4″ finish slab with 26 gauge Hy-Rib reinforcement: 170 lbs. total dead and live load remained on floor 24 hours. The deflection at end of loading one slab was 3/64″ and the other 1/32″. Upon load being removed the floor moved up to its original position.

J. E. SPENCER,
City Bldg. Inspr.,
Birmingham, Ala.

Details of these substantial enlargements just completed for Avondale Mills will be mailed to interested executives.

Owners of Avondale Mills have in recent years used thousands of tons of **Ensley Basic Slag** in the construction of permanent buildings, houses, streets and roads at Birmingham, Sylacauga and other points.

Birmingham Slag Co., April 12, 1920.
Birmingham, Ala.

Gentlemen:

The enclosed report from City Building Inspector covers his test on a concrete slab in Apartment Job for Avondale Mills.

The mixture used was 1:2:4, the aggregate being Ensley Basic Slag. We give considerable credit for the splendid showing made to the use of the aggregate which has certainly proved beyond doubt its adaptability to our system of reinforced concrete construction without the use of forms. Yours very truly,

Donaldson Concrete Construction Co.

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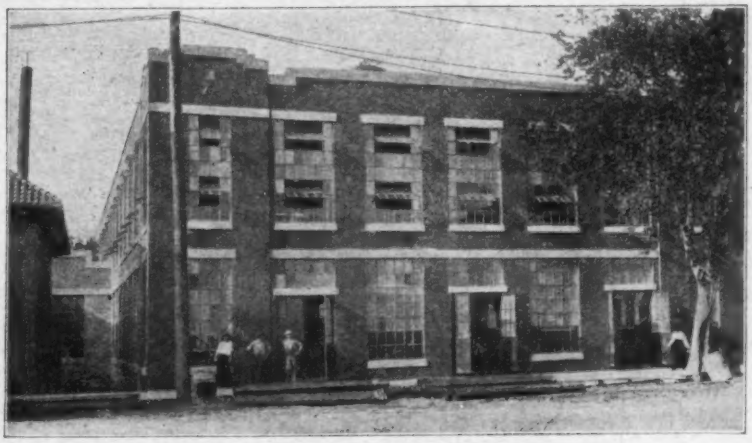
Williams Bldg.,
THOMASVILLE, GA.



Building Mills to a Stock Pattern

IT would be a desirable thing to build textile mills to a stock pattern—to buy them off the shelf, so to speak—

if the locations were identical for all new mills;
if physical conditions were the same;
if all the products were to be made alike;
if labor supply and quality were equal everywhere;
if shipping facilities were as good in each locality;
if power conditions were the same;
if the demands were steady; and
if there were no competition.

But just because the opposite situation confronts every textile plant owner or builder, he cannot safely build to a stock pattern. Each factor that will influence not only the cost of manufacturing, but the cost of distribution, should be considered in the design and layout of his plant.

This variation of plan to fit the individual needs of each plant is the work of the engineer. Frequently a single recommendation, by the savings it effects on building costs, production and distribution, absorbs his fee many times over.

S SERVICE

J. E. SIRRINE

Engineer

Greenville South Carolina

Typical Sawtooth Roof. Excellent lighting for the interior is assured.

Foresight
a Requisite for Builders

To be satisfied merely to profit by the experience of yesterday, to rest content on the history of yesterday's performances, would be out of keeping with the spirit of John W. Ferguson Company.

Common sense, policy, business acumen, and even sentiment, demand that every effort shall be made to broaden the scope and improve the quality of Ferguson Service.

There is no little thing in which Ferguson Service does not satisfy, and there is no great principle of industrial building in which it has not established a standard.

To the owner, the satisfaction in a building built by this organization is the result of understanding the value of foresight.

JOHN W. FERGUSON CO.

Ask these firms how Ferguson Builds

Firth Carpet Co.
N. Y. Belting & Packing Co.
Michelin Tire Co.
Brighton Mills Co.
De Laval Steam Turbine Co.

John W. Ferguson Co.

Engineers and Building Contractors

PATERSON, N. J. NEW YORK CITY

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65-102

The wall of steel stops would-be trespassers, bars outside dangers, insures inside security. Cyclone Fence compels respect for property rights; forms a compact, easily controlled factory area; soon saves its cost through losses stopped.

Fencing, Wire or Iron Built for Any Purpose

Phone, Wire or Write Main Offices, Waukegan, Illinois, or Branch Offices nearest you.

CYCLONE FENCE COMPANY

Factories: Waukegan, Ill. Cleveland, Ohio Fort Worth, Texas

Branches: Chicago Indianapolis Detroit Rochester Philadelphia New York Baltimore St. Louis Oakland Portland San Francisco

Look for the "Red Tag" the Mark of Quality

The Favorite Flooring for Modern Textile Mills,
(—and some of the good reasons;)

TUPELO

TU- TUPELO, "the Hard-Wear Lumber," has about every advantage there could be for factory flooring.

FACTORY FLOORS

The "Hard-Wear Lumber"

PE-

IN TEXTILE MILLS

"Works Easy —Wears Hard"

It is a "softwood," yet by reason of its "involved" grain it resists severe friction for many profitable years, without the usual tendency to slivering or splintering. Ask your Efficiency Engineer to investigate Tupelo—and then tell you.

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AND WAREHOUSES

SOUTHERN CYPRESS MFRS. ASSOCIATION

805 HIBERNIA BANK BUILDING, NEW ORLEANS, LOUISIANA, or
805 HEARD NATIONAL BANK BUILDING, JACKSONVILLE, FLORIDA.

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ANOTHER wide building whose width — and the economies which come from wide floors — were made practicable by Lupton Steel Factory Sash.

Dimensions are approximately 85 x 350 feet, with 12-foot ceilings and 15 x 8½ foot window openings. The wide sash, placed between narrow steel-concrete pilasters, give plenty of light for the work intended. Upper ventilators, close to the ceilings, permit the stale air overhead to escape so that fresh air can enter below.

But upper ventilators, left to the whims of the workers nearest them, are not always opened. In this case it was made certain that they would be, by connecting them to the lower ventilators so that both opened together.

Double connecting arms cost more than individual spring catches or peg stays, but are advisable where top ventilation is important.

Have you seen Catalogue 10-LSS?

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Amber St. and Allegheny Ave. Philadelphia, Pa.

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Detroit Pittsburgh Atlanta Boston

Canadian Manufacturers: The A. B. Ormsby Co., Ltd., Toronto

"Today —— the Sash makes the Factory"

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INVESTMENT VALUE

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Lupton Steel Partitions and Doors —Cat. 10-LSP

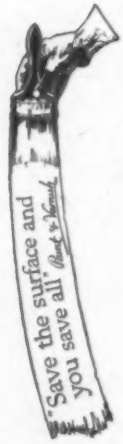
Lupton Rolled Steel Skylight—Cat. 10-Misc.

Pond Continuous Sash, for Pond Truss roofs, monitors, saw-tooths, and side walls—Cat. 10-PCS

Pond Operating Device for long lines of sash—Cat. 10-PCS

Our Experimental Laboratories Solve Your Paint Problems---

EFFICIENT and economic upkeep of Mill Buildings and Machinery presents great many vexing problems.



In order to assist executives in the selection of the right kind of paints for various purposes, we maintain for their convenience experimental laboratories.

Practical paint men of long years experience and thorough knowledge of the needs of Cotton Mills, are here to advise you.

Whatever your paint needs may be, put them up to these men. Their practical advice and suggestions will be helpful to you in solving you paint problems.

Write for booklet on "Pee Gee Industrial Paints"

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Established 1867 **Louisville, Ky.**

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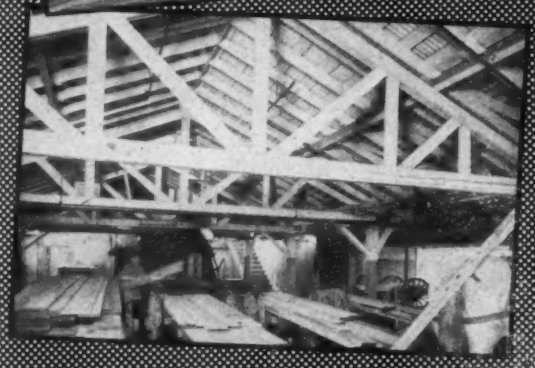
PAINTS AND ENAMELS



130 Extra Hours of Daylight
WITH
TOCO MILL WHITE

The Wood Mosaic Co. of New Albany, Indiana, claim that, since their plant was painted with Toco Mill White and B & P Industrial Enamel, they have gained more than an hour of daylight per day for five months in the year.

Furthermore they have reduced the number of electric lights through their whole factory.

Every square foot of the interior walls, ceilings, columns and beams is finished with Toco Mill White and B & P Industrial Enamel—even the stables are white. (These pictures tell the story.)

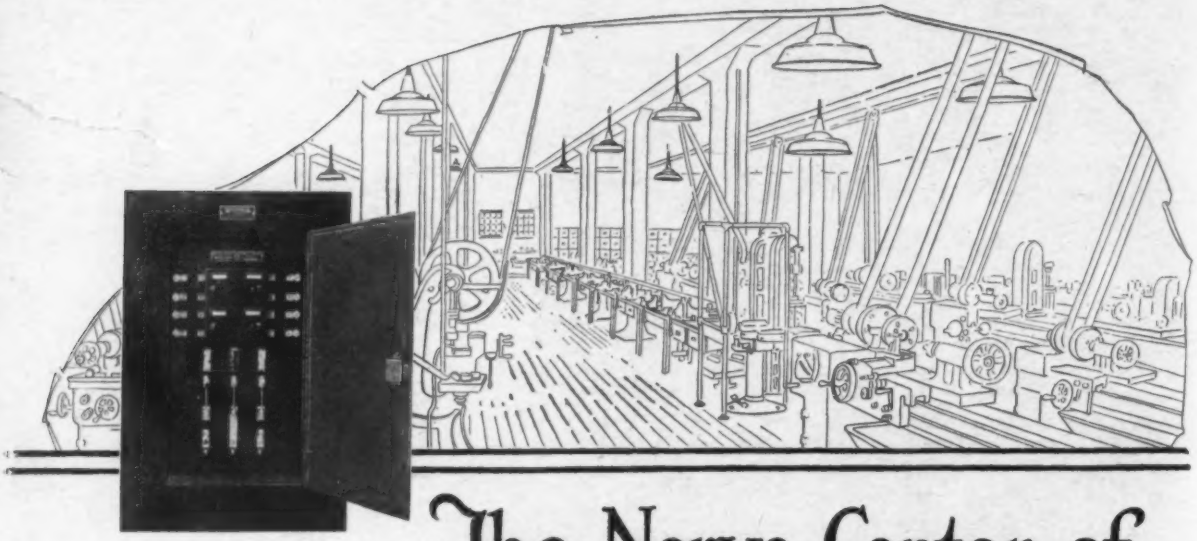
The Company officials and all of the employees are proud of their factory. Tropical Coatings help to keep up the morale of the entire organization by making the work rooms bright and cheerful every day in the year.

We Are Industrial Paint Specialists

For many years our efforts have been devoted to the manufacture of Protective and Decorative Coatings for Industrial Plants. Due to this specialization we have perfected materials that are unusually well adapted for the maintenance and upkeep of Factory Buildings.

If you wish, one of our representatives will be glad to call and make recommendations for the painting of any of the interior and exterior surfaces about your plant.

THE TROPICAL PAINT & OIL CO.
CLEVELAND, OHIO.



The Nerve Center of Your Illumination System

AS the nervous system distributes its energy through the nerve centers, so the entire plant lighting system centers in and radiates from the panel boards.

Important? Of course!

Benjamin-Starrett Standard Open Front Panel Board is the highest development of panel board construction—made and sold by an organization that takes pride in doing good work.

For all panel board purposes from 4 circuits up there is a Benjamin-Starrett Standard Open Front Panel Board—anywhere—wherever a panel board can be used; or anytime—it will be delivered on short notice. All this because of its accurate, factory inspected, unit construction. It can be installed quickly, easily and cheaply—an item to consider in these days of high labor cost. And you can be proud of the appearance of the finished installation.

There is no good reason for your having anything but the highest quality of workmanship and material on so important a part of your equipment. Consult with your architect, or electrical engineer *today* concerning Benjamin-Starrett Panel Boards. Your own electrical contractor knows where to get them and install them.

And remember—it's the safest, most adaptable and most durable panel board you can have installed. Write for information today, addressing

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Industrial Lighting Division
Electrical Division (including Benjamin Two-Way Plug)
Pressed Steel Products Division
Enameled Products Division
Starrett Panel Board Division

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Makers of Things More Useful

CONDULETS

Between Your Plant and Destruction

CONDULET your plant and thereby safeguard it against explosions or fires from electrical causes.

With the Crouse-Hinds catalogs as a guide, you can select a Condulet for each and every outlet and be sure that you are following approved safety-first practice. The importance of such a precautionary inspection is self-evident. Catalogs sent upon request.

CROUSE-HINDS COMPANY
SYRACUSE, N. Y.

Panel Boards **Knife Switches**
Guy Anchors **Condulets**
Flood Lights

. V and VH CONDULETS
They remain vapor, gas and dust-proof even though globes be removed for lamp renewals or are broken.

Condulet the Job

CROUSE-HINDS

HEADQUARTERS OF HUNTINGTON & GUERRY

TROUBLE-PROOF ELECTRICAL INSTALLATIONS

and

REPAIR SHOP FOR ELECTRICAL MACHINERY

Our own building with 20,000 square feet of floor space housing our executive offices, a large stock of all materials required for installation of Electrical Equipment in Textile Mills and a complete Repair Shop for the making of Motor Coils and all Repairs to Electrical Machinery.

A private branch telephone exchange Nos. 2946-7 connects all departments.

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HUNTINGTON & GUERRY, Inc.

River and Hammond Streets

GREENVILLE, SOUTH CAROLINA

ADAMS-BAGNALL

Increased Production
--with ABolites

Efficient lighting is of great importance in obtaining increased output from each workman and unit in the plant. It decreases spoilage and lessens the danger of accidents.

If you would increase production, install an efficient lighting system.

In ABolites there is a type and size of reflector for every industrial lighting purpose. The services of Adams-Bagnall illuminating engineers are at your disposal. They will cooperate with your engineers in planning an installation for your plant.

ABolites have many features which will interest you.

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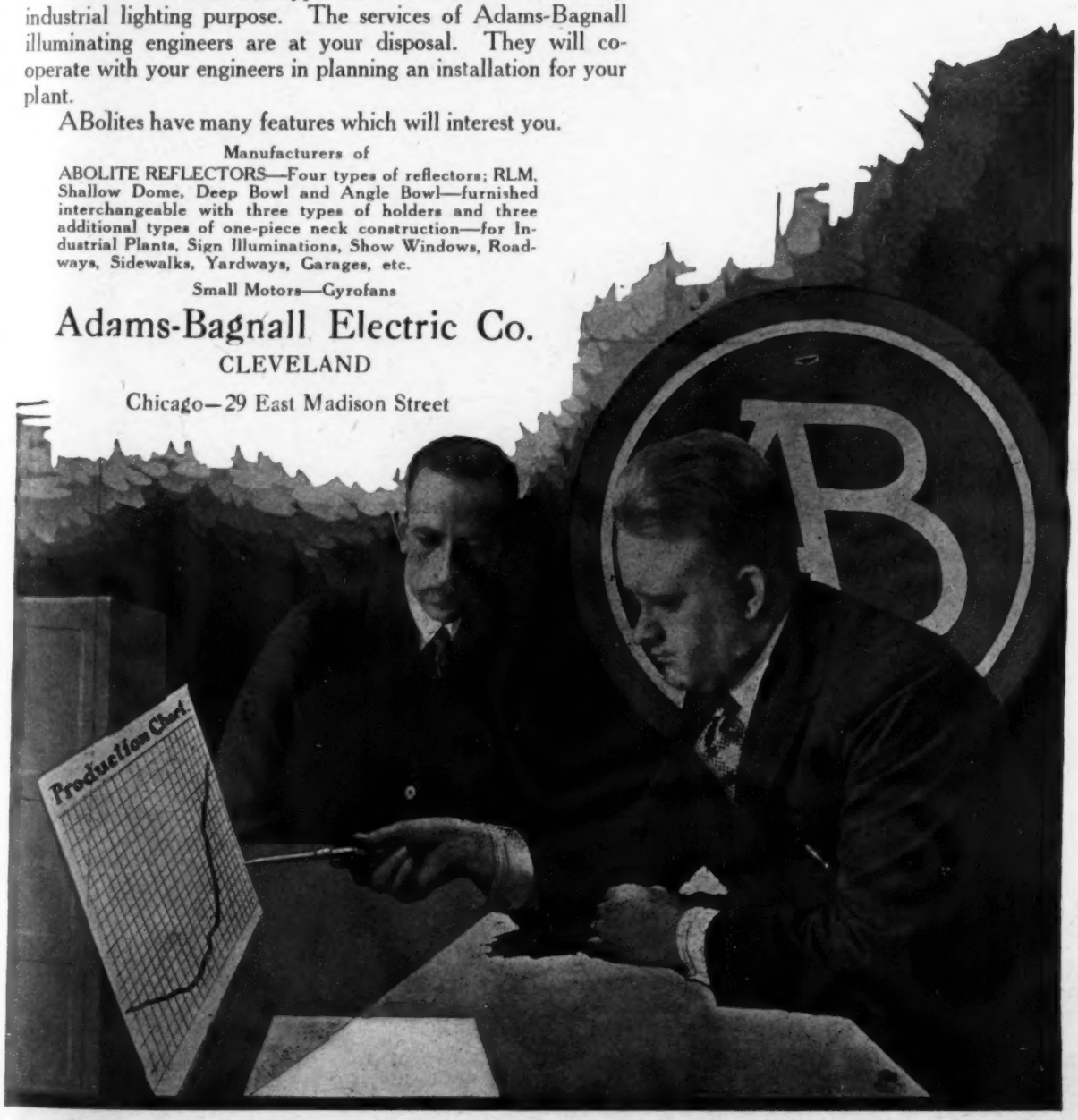
ABOLITE REFLECTORS—Four types of reflectors; RLM, Shallow Dome, Deep Bowl and Angle Bowl—furnished interchangeable with three types of holders and three additional types of one-piece neck construction—for Industrial Plants, Sign Illuminations, Show Windows, Roadways, Sidewalks, Yardways, Garages, etc.

Small Motors—Gyrofans

Adams-Bagnall Electric Co.

CLEVELAND

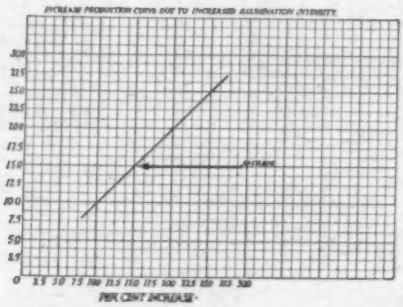
Chicago—29 East Madison Street



"Matty has nothing on this curve."

"What do you mean, Sam?"

"Why I've been running a curve on our production, since I installed Westinghouse Mazda Lamps last Spring, and this shows the result—look—



"Did Westinghouse tell you to run that curve?"

"No, Chief, but their engineer when he laid out our plan of lighting was so positive about the improvement that could be effected that I started this chart to check him up—and *by Jove, he was right!*"

"Well, Sam, all I can say is, that it is a pity more manufacturers do not increase their production through improved lighting."

"It only needs a start, Chief. Let them do as I did by writing the

Westinghouse Lamp Company

165 Broadway, New York City

Sales Offices and Warehouses Throughout the Country.

For Canada—Canadian Westinghouse Co., Limited, Hamilton, Ont.

A high grade uniform 20 Per cent. paste--- the equal or superior of any Synthetic Indigo ever imported.

THE DOW CHEMICAL COMPANY

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For sale by

ANILINE DYES and CHEMICALS, Inc.

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Branches:

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Philadelphia
Chicago
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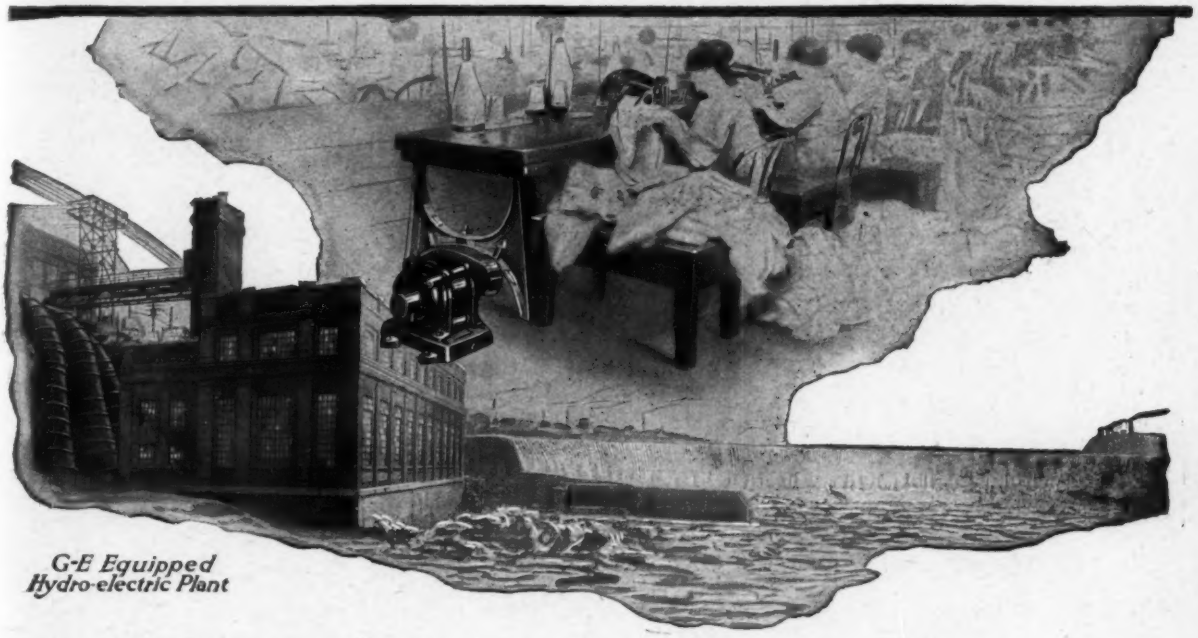
TRADE DOW MARK

IVANHOE
SERVICE TO LAMPS
Change Now
Factory lighting has been simplified and—to a great extent—standardized. If you have wavered as to whether to get more production by means of better lighting—don't wait—decide—make the change! On request we'll put you in touch with a competent lighting man near you, or have our own engineers make some suggestions.
IVANHOE-REGENT WORKS
of General Electric Company
Cleveland, Ohio
"Ivanhoe" Steel Reflectors, Lighting Glassware, Anderson Self-Adjusting Arms, and Illuminating Service
"Service to Lamps"
IVANHOE
SHADES-REFLECTORS

In many cities production can be increased, its quality improved, and new industries added by efficiently making and using the available power



G-E Equipped Hydro-electric Plant

How electricity increased and improved a textile city's production

EACH mill in a certain textile city was driven by its old water-wheel—production was low, so was quality.

In summer, low water and leaky canal beds slowed up the wheels—in winter, anchor ice did the same.

Finally, G-E textile mill specialists were called in to suggest a better way of using the water power.

A central water power plant was built to supply all mills with electric power and provide a surplus for new industries.

Electric drives at each mill applied power directly to productive machines, and losses due to mechanical drives were largely eliminated.

Machinery was enabled to operate at a constant maximum productive speed.

Its output was increased 35% and a very much better product resulted.

Any community's efficiency may be increased manifold by the proper utilization of Nature's resources and the application of electricity in homes, industries or on farms.

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y.

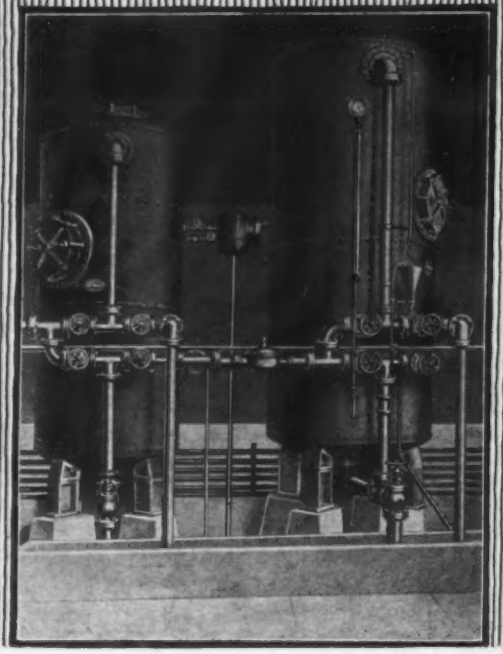
MILL POWER DEPARTMENT, BOSTON, MASS.

Look for this mark of leadership in electrical development and manufacture

G-E motors

From the Mightiest to the Tiniest

GENERAL ELECTRIC COMPANY



A MATTER of PROFITS, NOT of PRICE

It isn't a question of whether or not you can afford *"Permutit"* equipment in your plant. The point is this—how long can you afford to operate without a *"Permutit"* plant and the economies it will surely bring about in your mill? And the whole matter can be reduced to a dollars-and-cents basis.

We can show you figures—taken from the records of textile plants before and after the installation of *"Permutit"*—proving conclusively that the economies resulting from *"Permutit"*-rectified water are so large that the purchase of *"Permutit"* was a most profitable investment. In fact, owners of *"Permutit"* plants soon forget the purchase price, in the light of subsequent increased profits.

A "Permutit" engineer will call upon you—at your convenience—with conclusive proofs of "Permutit" profits.

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Offices in All Principal Cities

Water Softeners Filters

Permutit

TRADE MARK

Water Rectification Systems

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For Quantity and Quality Production

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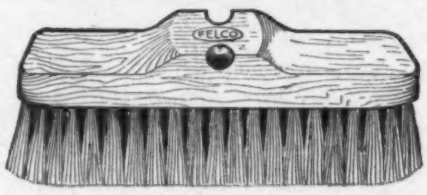
SHAMBOW RE-ENFORCED SHUTTLES

Re-enforced with Red Vulcanized Fibre

SHAMBOW SHUTTLE COMPANY

Woonsocket, R. I.



Floor Sweep

IT takes a good brush to stand the use and abuse of long and severe service, and mill men recognize the superior quality of

FELTON BRUSHES

They are made from the best material and by expert workmen.

There is a brush for every use at the lowest price consistent with the high standard of quality.

Departments are maintained for the repairing and refilling of worn out brushes at Manchester, New Hampshire, and Atlanta, Georgia.

S. A. FELTON & SON CO. Manchester, N. H. D. D. FELTON BRUSH CO. Atlanta, Ga.

Felton Curved Floor Sweep for Spinning Room Alleys.

COTTON

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L. L. ARNOLD, Editor. R. W. PHILIP, Associate Editor.

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Orders for any change in advertising must reach Atlanta previous to the tenth of the month preceding month of issue, otherwise publishers cannot be responsible for changes.

When changing address, notify us, not the postmaster. Always give the old address as well as the new one.

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This Issue 6,000 Copies.

Volume 84 Number

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It is a profitable investment to apply a protective paint of recognized long-wearing qualities.

DIXON'S
SILICA-GRAPHITE PAINT

is made in FIRST QUALITY only. It has made a wonderful reputation for protecting exposed wood and metal surfaces, including smokestacks, water tanks, roofs, engine and boiler rooms, etc. Dixon's Silica-Graphite Paint is not affected by climatic conditions and withstands the attacks of acids, alkalies and other corrosives.

Write for long service records in your line and Booklet No. 34-B.

Made in Jersey City, N. J., by the

JOSEPH DIXON CRUCIBLE COMPANY

Established 1827.

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Economy Presses.
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1—It immediately identifies your goods
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Kaumagraph Dry Transfers will stamp your trademark on your goods quickly, legibly and economically,—by hand or by machine, as you prefer.

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When In Urgent Need

We carry a large stock of mending eyes for loom harnesses and can promptly furnish any size desired. The eyes are of exactly the same size of twine and shape as the harnesses on which they would be used and will weave as well and wear as long as the harness itself.

GARLAND MFG. CO.
SACO, MAINE

With the Publishers—

Stepping Up

In the March number of this year Cotton emphasized editorially the necessity for individual mill men to take active steps to insure a reserve force of technically trained sub-foremen to be drawn upon as needed in their mill work. The report of Alex Long, chairman of the Committee on Education of the American Cotton Manufacturers' Association, read before the convention at Richmond, is a gratifying response to that appeal.

In this report Chairman Long said, "Your committee would recommend that in addition to aiding the common or graded schools in each community, that each member of this association provide one or more students for the textile department of the respective state institutions, assisting them financially, if necessary, or in any other way possible."

In summarizing the committee report, Chairman Long concluded with the following statement:

"1. That each and every anufacturer make it his task during the coming year to investigate carefully the educational situation in his own community and see to it that only efficient and earnest instructors are employed therein, reinforcing the salaries where needed and providing modern and up-to-date equipment.

"2. That night classes be instituted wherever the need appears manifest.

"3. Canvas among your young people and arrange to send one or more each year to special schools, such as that at Spartanburg or to the state instiutions, as at Clemson, Raleigh, Atlanta, Auburn, etc.

"4. That first hand investigation be made as to what the Federal Bureau for Vocational Education is doing and seek to put yourself in touch with this forward-looking work.

"5. That you make your watchword 'better schools for 1920-1921.'"

With this hearty cooperation on the part of the South's largest association of cotton manufacturers and the active support of the textile department heads of the various state textile schools, it would seem as if the number of "short course" men is to be greatly increased in the near future. This means a more adequate supply of technically trained men for the mills and the more successful utilization of "home grown" men and materials.

Speaking of Schools

One of the problems of cotton manufacturers, especially in the southern section of the industry, is the provision of modern school buildings for the mill villages, and an important part of that problem is the selection of suitable lighting equipment for this particular purpose.

A. L. Powell, author of the article entitled "The Lighting of Schools" appearing in this issue, is generally recognized as a leading authority on American industrial lighting conditions. He received the degree of electrical engineer at Columbia University, being graduated from that institution with the class of 1910. In the same year he became connected with the Edison Lamp Works of the General Electric Company at Harrison, N. J. He is affiliated with the illuminating engineering department of this company, being associated with G. H. Stickney, illuminating engineer and assistant sales manager of the company. Mr. Powell is also active in the Illuminating Engineering Society.

When he first went with the General Electric Company, a number of months were spent by Mr. Powell in the factory and the engineering departments obtaining practical data on the manufacture and engineering features of incandescent lamps. After a period in the commercial engineering department, he took up illumination work in what is known as the lighting service department. His thorough investigations in the illuminating engineering field have added in making him a recognized leader in this subject.

Mr. Powell has conducted a considerable number of investigations of lighting practice in the various classes of service and contributed the results of these experiments to the technical and engineering press. In this connection, it will be recalled that in Cotton for August, September and October, 1918, there appeared a series of three articles of this character prepared by Mr. Powell on practical and improved illumination of modern cotton mills. Mr. Powell has also had charge of the supervision of test and recommendation work, has served on a considerable number of committees of the various engineering societies and has given frequent talks on various lighting topics all over the United States.

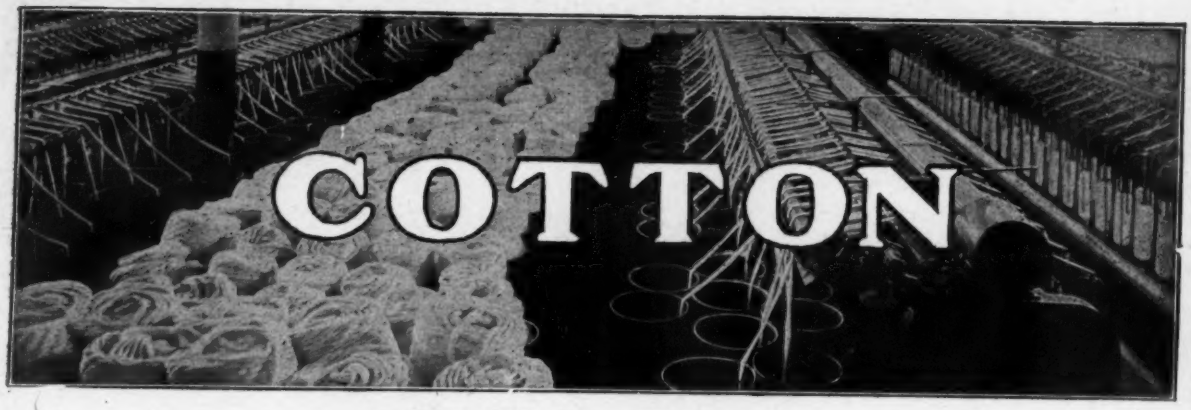
AMONG COTTON'S READERS

Garnett Andrews
President Richmond Hosiery Mills, Rossville, Ga.
Past President National Association of Knitters.

"It gives us great pleasure to hand you herewith our renewals for our several copies of COTTON, to which we subscribed for the heads of our different departments.

"We want to congratulate you on the growth of your paper and its high rank."

Garnett Andrews



June, Nineteen-Twenty

Improving Industrial Relations.

When the war began in 1914, one of its immediate results was the disorganization of credits in foreign countries. A southern mill, manufacturing largely for one branch of this trade, promptly received information from its selling agent describing the conditions and advising it to discontinue this line of goods until the situation became more settled. To the mill it meant one of two actions, manufacturing for stock or a curtailment of operating hours. The manager posted a call to his employees to meet him that night at the village hall. There he outlined briefly the position in which the mill was placed, pointing out as the two alternatives either the immediate reduction of the weekly operating hours from 60 to 45, which, during the summer would allow recreational facilities, or else the continued full time operation which would fill the warehouses with goods and unless conditions changed, cause the same curtailment to be adopted several months later during the winter period. He then announced that he had decided to adopt the immediate curtailment plan, but, he continued, "I don't wish you to bear all the burden, therefore, as long as the curtailment of hours continues, you will pay no house rent."

That manager was, and is, a student of human nature. He is never troubled with untoward labor conditions such as arise in many plants. He is often spoken of as a "born leader." This is an error, he simply uses his acquired ability to look at a situation from the viewpoint of the mass. Let us emphasize that term—"acquired ability."

In September, 1913, COTTON carried an editorial article under the caption, "Should Textile Schools Have A Human Nature Department?" At that time we stated that human nature, as it is commonly termed, includes all the original endowments or propensities that pertain to a man under natural rather than abnormal conditions. Many of these are characteristics acquired in early or later life and as all are controlled by the varying states of the human mind, a study of these resolves itself into a study of psychology, this being the science which classifies and analyzes such phenomena.

It was also pointed out that the textile student is primarily preparing himself for an executive or directorial position, and that the particular qualifications for such a position, if real success is to be attained, is the ability to handle machinery and men. In fact, the student's ability to handle men should, we indicated, be more highly cultivated than his ability to handle machines, as cotton mill machinery might be depended upon to fulfill certain requirements under certain sets of conditions, while, unfortunately, the same dependence could not be placed upon the operatives who handle those machines.

While we readily admitted that the mental reactions produced by a wide variety of causes in the individual factors of the great human machine would constitute a life study, we earnestly urged the adoption of such a department in the technical schools to lay the foundation and plan the superstructure for the student's future success as a manager of men.

This editorial caused considerable favorable comment among manufacturer readers of COTTON, and while it produced no immediate action on the part of technical school heads, it did bring out opinions from several. However, it is of interest to note that *The Tech Engineering News* for May, 1920, prints a leading article by Erwin H. Schell, Professor of Business Management of the Massachusetts Institute of Technology, under the title, "The Next Step in Industrial Management," which seems to indicate some definite progress along this line of thought. We quote some statements by Professor Schell:

> "In every manufacturing industry is a group of men, sometimes termed production executives, whose duty is to convert raw material into finished product by means of the application of mechanical and human forces, the first being made available through the operations of machinery and the second through the operations of labor.
>
> "* * * * But their use of machinery can only be made through their employees. It is obvious that their problem is then to handle men which involves a knowledge of the humanities as well as an understanding of technicalities. In the industries of tomorrow, this will be the sole activity of the production executive.
>
> "To teach the handling of men is the next step in industrial management, and it is an activity that is susceptible of education. We must take the art of management out of the realm of intuition and view it in the light of reasoning and with the confidence that underlying principles and laws may be found and utilized as in any other branch of human endeavor.
>
> "We do not have to be phychologists to appreciate that in every person there are normal desires which ask outlet in their daily work. There is in all of us a sense of justice which asks satisfaction, a de-

sire to protect and improve the standard of life of those who are dependent upon us, a desire for self-expression, to create, a desire to be with others, an impulse to play, a wish to learn, a liking for work under an able leader.

"Providing means for the satisfaction of these normal wants in industry is one of the tasks of man-management and if the production executive is familiar with these impulses, he can interpret his management problems far more easily and solve them in a vastly more effective way.

"It is possible to list the important prerequisites to managerial ability, as well as characteristics which may be developed through training and which are essential to successful methods of administration. We can also indicate definite methods of procedure whereby those qualifications can be developed.

"And lastly, it is entirely practicable in any one industry to develop an assemblage of standards of administrative procedure which will be of great concrete value to the executive organization. For example, in any one plant there are ways of introducing the new employee, of extending praise and commendation, of administering rebuke or criticism, of announcing dismissal, of developing loyalty, of arousing incentive, of developing esprit and morale which have been proven to be exceptionally effective and which successful executives perhaps unconsciously act upon. There are best ways of quieting anger, of removing jealousies, of dispelling imagined wrongs, of capitalizing conceit, of inspiring manliness, courage and self-respect which should be made the subject of round table discussions in the executive organization. The administrators will thus indirectly accomplish another great step in that they will face their problems of management in a reasoning rather than an intuitive way and will begin to *think* about handling men."

The M. I. T. has always been a leader in technical thought and opinion and this may be but the budding of the germ idea that will later develop into a practically working possibility. As usual, COTTON's columns are open for any suggestions or discussion.

Moral Altitude.

BY ALFRED F. WALDO.

Moral altitude! It means high standards of integrity and purity, superiority of likes and interests, loftiness of aim and aspiration. Easy enough to define, but to *feel it* —that is the task.

Disembarking from the Transcontinental, which only thirty-two hours ago hurried us out of Chicago, we inhale deep draughts of this air at Colorado Springs, and ask ourselves, What causes this atmosphere to be so bracing?

Not enough to answer that constant breezes from the Rockies sweep it clean, that heat and moisture intermingle in perfect proportions. This only partially explains. There is a stimulating quality which transcends analysis, but which one *feels;* a new vitality experienced; one's lungs expand, he walks on mystic stilts, his head is in the light. The full answer is one word—Altitude: we are six thousand feet above the level of the sea.

In like manner, there is something about the character of an excellent man which baffles explanation. As there is a certain quality which causes some fabrics to be beautiful, some pictures charming, some music entrancing, and some poetry inspiring, so in some men, there is a quality of character which is morally bracing and vitalizing to all with them they mingle. The explanation is Loftiness of Character—Moral Altitude.

Stonewall Jackson has it. Why does he inspire his troops with unbounded confidence? Why fight they under him with almost fanatical desperation? It is not merely that they believe in his wonderful military genius. It is that they feel the power of his moral elevation, the overmastering earnestness of his convictions.

In England, two centuries ago, thousands of good but unfortunate people lay without hope in prison for debt. Visits the prison a generous hearted man, investigates pauperism, opens the jails, releases the victims, and obtains a royal grant of land, to which are invited the poor and oppressed. Who is this noble founder of a noble State? Not his most extravagant eulogists profess that James Oglethorpe is errorless; but no student of his life can fail to feel the tonic of his lofty-mindedness.

Like morning splendor glistening from Matterhorn, is the moral grandeur which encircles our remembrance of the founder of another American Commonwealth—William Penn: "I will found a colony for all mankind." Superior tolerance, in advance of his contemporaries!

Washington has it. What disinterested patriotism, what purity of personal life! Lincoln has it: a raw, youthful Sangamonian in the Illinois Assembly, he is urged to enter a profitable but questionable compact. His answer: "You may burn my body to ashes and scatter them to the winds of heaven; you may drag my soul down to the regions of darkness; but you will never get me to support a measure which I believe to be wrong, although by doing so I may accomplish that which I believe to be right." And they never did.

Against the man of lofty mind, it is charged that he tends to ignore the actual facts of existence and society. Your Pacifist holds a splendid ideal—universal peace; but in the light of the recent World War, the means by which he seeks to achieve that ideal appear impractical.

But this is only a tendency, not a necessity. It may be controlled. Idealism and realism are not oil and water. In many a man they co-exist. The solvent is a passion for *facts.* Grover Cleveland said it well: "We confront a condition, not a theory." Face facts, reckon with them, relate your plans to them, and *get things done.*

The contrast between Pilate and his Faultless Prisoner exemplifies the ageless worth of Lofty Character. The Roman ruler is fairly frantic: "Knowest Thou not that I can crucify Thee, or release Thee, as I will." Calm and serene, the Galilean, "Thou couldst have no power against Me at all, except it were given thee from above."

Our Master went about with His head in the air. But He went about with His feet on the earth. Therefore, also, "He went about doing good."

Fire Not Serious.

Many conflicting reports have been going the rounds concerning the recent fire at the California Cotton Mills, at Oakland, California; these have varied all the way from serious injury to total destruction of the plant. Advices from Gen. Mgr. J. R. Millar state officially that while they did have a little fire on April 16 it was such a minor character that the mill was never even closed down during the time the fire was being extinguished.

A MAN from MOONSHINE MOUNTAIN

If you should carefully examine a map of Georgia in an effort to find what is colloquially known as "Jones'es cross roads," you would probably search in vain. This is not entirely the fault of Jones' cross roads, however, as it has been in existence and known locally for many years. Neither is the map maker solely to blame, as Jones' cross roads has always been a quiet sort of a place, neither especially seeking nor avoiding publicity. Like many another quiet spot on the map, however, Jones' cross roads can no longer remain in seclusion among the red hills of Harris county because a ertain stalwart Georgian was destined to there begin his earthly career. That is, Jones' cross roads receives the credit as the nearest settlement to this Georgian's home, which was about eight miles distant.

Down in Georgia, Harris county and moonshine booze have been more or less synonymous terms; that is you never thought of one without recalling the other. However, in common with many of the human race, this young Georgian sought his pleasures far afield. Whether this was merely an instinctive action on his part, or whether it was the result of youthful observations in the neighboring hills would be entirely a matter of conjecture on the part of this chronicler. It is true, however, that Allen F. Johnson grew to manhood with two outstanding characteristics—a desire to see things develop and an ambition to have an active part in inducing the development. These, combined with a kindly and unselfish disposition, an innate sense of responsibility and a serious earnestness in everything he undertakes are as much a part of the individual as the immaculate neatness of his personal apparel and surroundings.

As was the custom in the early days, when school houses in the rural districts were few in number, young Johnson received his earlier training under a private governess brought to the plantation for the purpose. Here, too, he later earned his first money, a "shin plaster" or paper dime which was awarded as compensation for driving the mule at a mule-power gin for the period of one working day. Afterward he expanded his resources by picking cotton at thirty cents a hundred pounds.

When about fourteen years of age, his parents removing to West Point, Ga., young Johnson finished high school in that city and graduated from the University of Georgia at Athens in 1890.

Returning from college, Johnson began to look around for some business connection and for a limited period was employed at the resort hotel at Warm Springs, Ga. Not finding sufficient action in the hotel game to keep him interested, he returned to West Point and with a younger brother began the operation of a grocery store. For a short period this kept him busy, but it soon reached the limit of its immediate growth, and as events didn't move swiftly enough to keep his interest centered, Johnson left the store management in his brother's care and became connected with Harrington Brothers, then well known cotton merchants at West Point.

The cotton business awoke his penchant for action; here was action aplenty. Therefore he dug into the business and began to make things develop. At the end of a year he was made manager of the Griffin, Ga., office of Harrington Brothers.

In the meantime his father, John D. Johnson, had become financially interested in the cotton mill that is now known as the Langdale Plant of the West Point Manufacturing Co., at that time a somewhat obscure property. However, Johnson senior secured Will Lang, an experienced English mill manager, to operate the mill and later

the controlling interest passed to the present owners. From this experience the senior Johnson recognized the possibilities in cotton manufacture and he suggested to his son that in the cotton mill game he could get all the action he desired and have an opportunity to personally develop with the business.

Therefore, in 1895 Johnson resigned from Harrington Brothers and secured a position in the office of the West Point Manufacturing Co., later becoming assistant superintendent under Thomas Lang, the father of Will Lang. He remained in this position for eight years, not only absorbing the practical end of cotton mill management, but also having instilled into his system Mr. Lang's very successful methods of labor control, for good treatment of his operatives was almost a religion with "Old Man Lang" as he was affectionately termed by his associates and employees alike.

By this time rumors of Johnson's possibilities in the cotton mill world began to be talked of locally and C. V. Truitt, who with Fuller E. Callaway and others had just built the Unity Cotton Mills at LaGrange, the first of what is now known as the Callaway-Truitt group, reached out his long arm and grabbed Johnson for the Unity Mills.

After about a year's service at LaGrange, Johnson was sent to the Milstead Manufacturing Co., at Milstead, Ga., as manager, Mr. Callaway having been induced to include this property in his then growing group of mills.

On January 1st, 1912, at the conclusion of eight years of service with the Callaway interests, Johnson was elected president and manager of the Exposition Cotton Mills of Atlanta. At the conclusion of a period of service with these mills, which were the most successful years in the history of the plant, Johnson tendered his resignation in January, 1920, having exceeded his usual eight year period by two weeks.

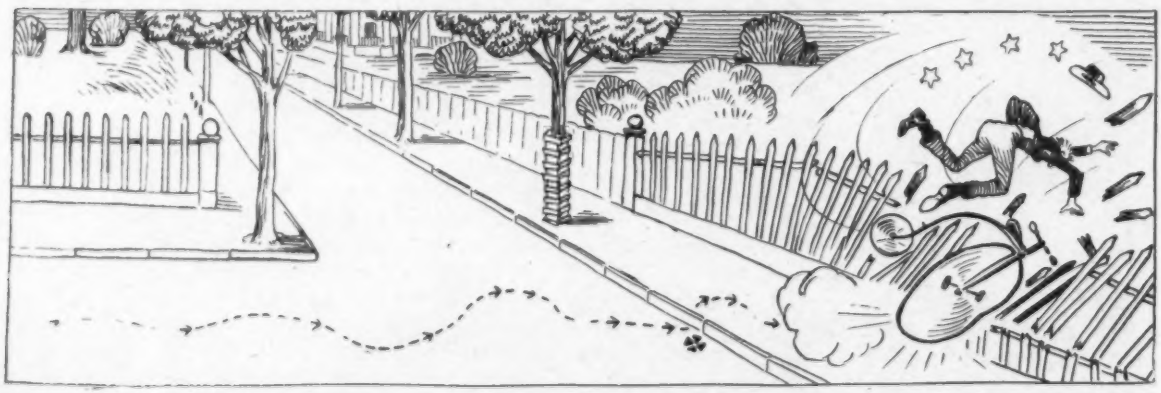
He resigned from the Exposition Mills to become vice-president and director in charge of operation for the Consolidated Textile Corporation of New York, with southern offices at Greensboro, N. C. The mills now under Johnson's charge include the Lynchburg Division at Lynchburg, Va., the Henderson Division at Henderson, Ky., the Ossipee and Hopedale Division at Burlington, N. C., the Pilot Division at Raleigh, N. C., the Ella Division at Shelby, N. C., the Pelham Division at Pelham, Ga., and the Bonham Division at Bonham, Texas.

Johnson was president of the Cotton Manufacturers' Association of Georgia for two successive years. He has served the American Cotton Manufacturers' Association as chairman of its Board of Governors and as vice-president. He is a director in the mills at Milstead and Manchester, Georgia. While in Atlanta he was an active member of the Atlanta Rotary Club and a member of the Capital City Club.

In sports he was always fond of riding and driving. Beginning away back with the mule at the cotton gin, he progressed through the bicycle stage to the ownership of two fine saddle horses and a handsome trap. In time he reached the motor car stage and this, with a mild attack of golf fills what little time he has to spare. It is told on him that he once unsuccessfully tried aviation in his younger days, but this was before the time of successful heavier than air equipment.

It must be remembered, however, that he takes his sports, like everything else, in a serious frame of mind and with a purpose in view. When he rode the mule it was for a paper dime. When he rode in the trap—well, he's happily married anyway. When he rides in his motor car it's because he desires to go somewhere. When he plays golf, it's usually because his physician orders him to do so. Just what purpose he had in mind when he attempted aviation he never has told, but it is rumored that he had objections to the location of a neighbor's fence.

Quick to make a decision but determined when satisfied he is right, shy almost to reserve, honest to the core, with himself as well as with others, Johnson has a personality that draws men to him and leads to lasting friendships. With an unlighted cigar constantly shifting its position in his mouth as his one external sign of nervousness, with blue-grey eyes that smile or don't as the occasion demands, the new president of the American Cotton Manufacturers' Association stands as a type unto himself, an example of successful achievement as the result of the steadfast application of the chief traits of his character—an ever present desire to see plans mature, to produce results, and an ability to gratify that desire.



Southern Mill Men Meet at Richmond

Richmond smiled! Her fair ladies and chivalrous men lived up to their reputation for open handed southern hospitality and the delegates to the 24th annual convention of the American Cotton Manufacturers' Association who met at the Jefferson Hotel on May 25 and 26 were delightfully entertained.

The number in attendance was large, probably 500 or more being registered by Secretary Adams and his assistants. It was also especially noticeable that the attendance at the sessions remained uniformly good throughout the entire meeting and it was the general consensus of opinion expressed by numerous delegates on the eve of their departure that it was a fine meeting, some even going so far as to say that in their opinion it was the best in the history of the association.

The First Session

was called to order in the assembly hall at the Jefferson Hotel shortly after 10 o'clock on Tuesday morning with President Hammett in the chair. An invocation was pronounced by Rev. Dr. Fair of Richmond.

President Hammett then introduced Col. D. O. James, secretary of state, who welcomed the visitors on behalf of the state of Virginia. Colonel James, who is a southern gentleman of the old school, opened his address by saying that the Federal laws had deprived Virginia of one of her methods of entertainment but that he had requested the hall committee to see that ice water was placed upon the speaker's table and pouring himself a glass of this beverage he toasted the visiting delegates with what he deemed was the best liquid refreshment now available. Colonel James pointed out that there was more Americanism expressed throughout the country during the war than had been prevalent for many years, but as soon as the armistice was signed selfishness became once more in the ascendance and every individual at once undertook the furtherance of his own interests. However, he continued, while everything is dark at present optimism has got to come.

The speaker reviewed the panic of 1873 when it was predicted that the country could not recover in 50 years, but this, he pointed out, was a misconception of the country's ability to come back, as within a very short period conditions once more became normal. As another illustration he pictured France in 1871, after the Franco-German War, when similar dismal predictions were made, in spite of which the country promptly recovered. The lesson that he drew from these and similar events was that these United States in spite of the present radical trend toward Bolshevism and Anarchism would as a country promptly recover.

Colonel James then proceeded to formally welcome the delegates to the great state of Virginia in behalf of Governor Westmoreland Davis who was unable to be present.

President Hammett then introduced Mayor George Ainslie of the city of Richmond to welcome the delegates in behalf of the city. Mayor Ainslie refused to drink of the beverage with which Colonel James had toasted his hearers on the plea that it had seemed to make Colonel James pessimistic and he did not wish to paint a dark picture of the convention city. He also intimated that a careful search might bring to light other beverages of a nature not so puritanical.

President Hammett then introduced Scott Roberts, president and treasurer of the Adelaide Mills at Anniston, Ala., to respond to the addresses of welcome on behalf of the association. Mr. Roberts opened in a happy vein declaring that as this was his first visit to Richmond he was not familiar with the quality of entertainment previously offered to visitors and, perhaps for that reason, he felt entirely satisfied with the liquid refreshments so genially offered by Colonel James. He then paid a glowing tribute to the memory of Robert E. Lee.

Continuing the speaker pointed out that one of the

RETIRING PRESIDENT JAMES D. HAMMETT.

real truths as shown by the history of civilization was the ability of nations and groups of people to recover from the devastations of war or other climaxes. He pointed out that the terrible struggles of the reconstruction period of the Civil War had been the foundation upon which has been built the present greatness of the new South. Mr. Roberts concluded by expressing the pleasure of the delegates at being able to be present in the mother state of the South and the wonderful city of Richmond.

At the conclusion of Mr. Roberts' address President Hammett introduced Chairman John M. Miller, Jr., of the entertainment committee who welcomed the visitors in behalf of this committee and announced the plans of the committee for the entertainment of the members during their stay in the city. These included a bureau of information which was maintained in the lobby of the hotel

by the Chamber of Commerce; automobiles to take the members and guests to and from the golf clubs of the city during the hours between sessions; club privileges in all the clubs of the city, the association badge being the only necessity for identification; and a number of special entertainments for the ladies of the convention by the ladies' committee of which Mrs. E. C. Laird was chairman.

President Hammett then announced the appointment of the following committees:

Committee on Nominations: John A. Law, A. M. Dixon and Cason J. Callaway.

Committee on Resolutions: B. E. Geer, S. F. Patterson and J. J. Bradley.

In introducing the first speaker on the morning program President Hammett pointed out that the first class of men in the country to aid and promote civilization were those of the ministry, but that the second class who were successfully working to this same end were the school teachers. He then introduced Hon. P. P. Claxton, the United States Commissioner of Education, of Washington, D. C., who spoke on "The South's Special Interest in Education." Dr. Claxton's address may be found upon another page of this issue.

At the close of Dr. Claxton's address President Hammett thanked him for the sentiments expressed and gave it as his belief that all men should make a hobby of education and not only do all possible to improve education in the community generally but especial attention should be given to the children of the employees that were in a sense in the care of the mill managers. He then introduced Albert L. Scott, of Lockwood, Greene & Co., Boston, Mass., who spoke on the growing and handling of cotton. This address also appears upon another page.

Adjournment was then taken for luncheon.

The Second Session

was called to order shortly after 3 o'clock and after some brief announcements President Hammett introduced Homer L. Ferguson, former president of the Chamber of Commerce of the United States and president of the Newport News (Va.) Shipbuilding and Dry Dock Company, who spoke on "Our Merchant Marine and Its Possibilities." Extracts from the address of Mr. Ferguson will be found upon another page.

The next address upon the program was by Theodore H. Price, editor of Commerce and Finance, New York City, who spoke on the subject

Shall We Sell Our Cotton Mills?

The speaker advised that it was not his intention to attempt to answer this question finally but that so many mills had been bought and sold during the past 18 months that he thought a brief statement of the considerations that had weighed with those who bought and sold as well as those who did not sell might be of interest.

Mr. Price quoted at length from an article by Frederick W. Tattersall, a recognized English authority, because of his allusion to the appreciation in values that has taken place in cotton mills in England since the war commenced and the concern of the labor unions lest the manufacturers might find that it would be impossible to pay dividends on the greatly increased capitalization without reducing the wages of the employees.

The speaker declared that it is evident that the cotton textile industry on both sides of the Atlantic is entering upon a new stage in its development. It is becoming more complex and is trending more and more not only toward the production of its own raw material but also to the selling of its manufactured articles through its own distributing agencies. "Given the necessary efficiency in administration," continued the speaker, "it is obvious that integration greatly increases the opportunity for profit and a recognition of this truth is at the bottom of the recent movement toward the consolidation of cotton mills."

However, the speaker pointed out, no one company or consolidation of companies controls as many as 1,000,000 spindles and it is therefore obvious that they are still a long way from the point where they may be checked by the Sherman law. "We may, therefore, take it for granted," continued the speaker, "that those mill owners who have sold their mills have been disposed to believe that with normal conditions the small mill under independent management would find it extremely difficult to compete with the larger unit or even with another small mill that was an integer of a coordinated organization in which efficient specialization was possible. Those owners who have declined to sell their mills have in most cases assigned either the income tax or the insufficiency of the price

offered as the reason for their refusal. Both are good reasons."

The speaker indicated that he had no hesitancy in saying that those who require large quantities of cotton goods would do well to protect themselves by the purchase of a mill whenever they can get one that is suited to their needs. "I would go even farther," continued the speaker, "and advise that they should more completely integrate their business by undertaking to produce at least a part of the raw cotton that will be consumed in the manufacture of the goods they will use; for unless I am much mistaken there will be no great increase in the world's cotton production for many years to come and we will have to face basic conditions that will give us a seller's market and put the buyer and especially the large buyer at a disadvantage."

In conclusion the speaker pointed out that in his opinion there had been too many and too radical taxation laws passed by Congress and he thought that it was time for business men to actively resent these actions by taking the matter up in person with individual congressmen and senators. If such an action were not unanimously taken it seems quite possible in view of what has been done in the past no immediate change of attitude might be looked for in the future.

Immediately at the conclusion of the second session a Board of Governors meeting was held in a small room adjoining the convention hall.

The Third Session

was the association banquet which was held in the banquet hall of the Jefferson Hotel on Tuesday evening with President James D. Hammett as toastmaster. The principal speakers of the evening were the Hon. John Barrett, Director of Pan-American Union at Washington, D. C., who discussed "Pan-American Commerce—Our Great Opportunity," and Dr. D. W. Daniel of Clemson College, S. C., who spoke to the subject "The Measure of a Man." Both addresses were thoroughly enjoyed by those present and the banquet hall was filled to overflowing, late comers being unable to secure seating space.

The Fourth Session

was called to order in the assembly hall on Wednesday morning the opening feature being

The President's Address.

President Hammett spoke as follows:

The past twelve months have been in the nature of the calm after the storm in association matters. Previous administrations during the war period were necessarily active and were forced to devote a great deal of time and labor to association matters while the administration just closing has been relieved of the strenuous duties involving preceding administrations because of the competent and thorough manner these matters were attended to by our predecessors. Practically the only serious matter arising during our encumbrancy of the office was the coal situation of last December, caused by the strike of the labor in the coal fields. We handled this matter as best we could through the secretary-treasurer of the association, and Geo. W. Forrester of the traffic department, together with a committee appointed for that purpose, and succeeded in a way in minimizing the restrictions that were contemplated, and which would have wrought serious injury to many of the members of the association, as well as thousands of men and women employed by its various members.

An arrangement has been made with Geo. W. Forrester, who represents a large number of mills in traffic matters, which gives the association the benefit of the advice and services of Mr. Forrester in general traffic matters, though individual mills do not have the right to call upon Mr. Forrester directly unless they be members of the traffic department.

Because of the inactivity of Congress in matters other than the peace treaty we have been called upon to do little in that direction; therefore it is my purpose to leave the matter of details of the association's activities to the secretary-treasurer in his report, and with your permission will express my views on a few of the subjects engaging public attention, with the hope that my associates will agree, at least in part, with the views set forth, and take any action they may deem wise to carry out the thoughts expressed.

THE TARIFF.

The large majority of the membership of this association have, because of reasons that are unnecessary to dis-

cuss, been members of that political party whose principles in the past have been antagonistic to the principle of protection. While we would gladly see this great question removed from partisan politics, and settled in a just and proper way by a competent and non-partisan commission, we doubt the ability of Congress to delegate so important a subject to any commission other than themselves, and do not feel that non-partisan action is possible in Congress.

May we not be permitted to suggest that the war has changed public sentiment and public expediency in a great many matters, and that it is only reasonable to assume that public interest in the protective policy may have changed in that territory covered by our Association, and that the principle of a reasonable and just protective tariff which will furnish reasonable protection to industry, and to the thousands employed by industry, will be gladly endorsed by those who formerly were the foes of the principle? We feel it is very possible, and that the interest of our industry, and the employees of the industry, together with the people at large, demand that such protection be given against foreign aggression as will insure prosperous occupation on the part of the industry, and those who are employees of the industry.

EDUCATION.

The membership of the association recognize that through education more than through any other agency can the citizenship of the various states be brought to that degree of perfection so much desired. We cordially endorse the public schools and literary colleges, and urge ample assistance for each of them. We also urge a strict enactment and enforcement of compulsory school laws to apply to all children between the ages of six and fourteen years, the school term to be not less than six consecutive months of each year and eight months if it can be possibly arranged. We contend that child labor laws affecting children in excess of twelve years are harmful to the child unless coupled with compulsory educational laws. We, as members of an association that recognizes the value of proper training to the young mind, most urgently suggest that proper and ample remuneration be given to those who have chosen the profession of teaching as a life work, and in turn urge those in authority to secure competent men and women who will not chase strange and unsafe theories, and instill into the minds of those who are in their care ideas that are dangerous and often vicious.

While giving the fullest endorsement to the literary courses as taught in the public schools, and standing ready to furnish through taxation our full proportion of the needed funds, we are perhaps as fully interested in that form of education which more closely applies to our particular industry. Textile education is, in our judgment, the one thing needed to place cotton manufacturing in that portion of our country covered by our association in a most enviable position. The success or failure of a plant manufacturing either cotton cloths or yarns depends to such an enormous extent on the human equation that it is alarming to note that we who have been placed as leaders of the industry have so far failed to grasp the true significance of proper training for those who must operate the plants. Brains that are raw, or improperly trained, may in periods of prosperity succeed in turning into the treasury a fair return on the investment, but in periods of depression the industry is seriously handicapped and often with disastrous results to the individual plant which is far reaching in its effects on the standing and credit of the industry as a whole. Brains that are properly trained can and will enhance the earning capacity of the industry in periods of prosperity, and when periods of depression are with us will be able to broadly view the situation, and so conduct the property that disaster will be avoided. Additionally, with properly trained men in charge of the industry, the operative will probably have instilled into him an ambition to regard his occupation as permanent rather than temporary, and with an earnest desire to climb to the top, and through encouragement from the competent leader improve himself or herself so as to make a better and happier man or woman with the consequent effect that each community will become a more desirable place in which to live, thereby holding the vast numbers that are now engaged in textile manufacturing, and who are at heart true and most estimable men and women, but whose ambition to enjoy the higher things of life has been allowed to lie dormant, and in addition attract to mill life many whose conceptions of mill work are so thoroughly erroneous. Permit me to urge upon the membership of this association real and active interest in this subject so that some plan may be put into practice that will in a few years fill the mills and communities with men whose technical education, added to a reasonable amount of literary education, will forever relieve us of the embarrassing and oft propounded query, "where may we secure a competent superintendent or overseer?" Join hands in an earnest way, and evolve a plan whereby at least three hundred young men from the mills of the South will be encouraged each year to attend a properly managed textile institution, and in ten years the problem of competent men will be minimized, and the South become the greatest cotton manufacturing country in the world, as it is at present the greatest cotton producing country in the world. The brains are in our mills, and only need cultivation, and I trust we will not neglect to grasp an opportunity that is at our doors, and which means so much to the industry, and to the country.

COST OF LIVING.

Many theories have been advanced with the object of making living conditions more nearly in line with pre-war conditions and more nearly in reach of the more unfortunate elements of our citizenship. Many of these theories possess an element of merit, while the vast majority are the idle dreams of men and women whose hearts are probably in the right place, but whose knowledge of economics are extremely limited.

Notwithstanding the fact that the country from the individual's standpoint is more prosperous than has ever been known in the history of the republic, there is an evidence of unrest and discontent among the people that is most alarming to the thinking men of the nation, and this unrest is charged by many to the fact that the cost of living has materially advanced. It is entirely overlooked that all commodities are selling at record breaking prices to the profit of the farmer, that real estate has reached a value beyond the dreams of the most pronounced optimist, and the wage scale has reached a point that puts the more violent labor agitators to shame, while a job that is lucrative is open for every man or

woman who can be secured to fill it. Yet the unrest exists to an extent that causes the greatest apprehension on the part of those who must direct the affairs of the nation.

Apparently we have lost sight of the fact that labor, the foundation of wealth, cannot be lessened and at the same time be made more remunerative without lessening the supply and increasing the demand for commodities to such an extent that buyers advance prices on themselves, and we may theorize as much as we may, and advance through legislation or resolution thoughts that are intended to furnish relief, and yet in the end must face that old and well recognized law of supply and demand, and know that it stands today as always as positive and inexorable as the laws furnished Moses on Mount Sinai. When the hours of labor are reduced the supply of commodities necessarily are reduced, and prices are just as surely to be advanced. What is the remedy? Permit me to say that in my judgment the only possible solution is to increase the number of producers, and decrease the number of consumers, thereby increasing the supply of commodities and decreasing the demand for the necessities of life. How may this be done? By increasing the population in the rural districts, making producers of them, and reducing the population of the cities and towns, thereby reducing the number who must of necessity be consumers only of that which we eat and consumers of the raw material of that which we wear.

Rural life has gradually, but consistently, grown into disfavor, while city and town life have become so popular that towns and cities are rapidly growing to unwieldy proportions at the expense of the rural communities. In my judgment the greatest objection to rural living consists in its isolation and lack of those conveniences which are enjoyed by those living in the more populous communities, and steps should be taken to overcome to a large extent this isolation, and cause those attractions to easily be grasped by those who should elect to live the lif of a ruralist and become producer of that which comes from the soil. Good roads, telephones, and automobiles are great conveniences, and are of vast benefit to those who live in the isolated districts, but I submit that young people who are destined to be the real tillers of the soil demand more intimate association with those of like age and without the association becoming too inconvenient or burdensome. Permit me to suggest that we urge the agricultural departments of the federal and state governments to inaugurate an aggressive policy of encouragement to those living in rural districts to congregate their homes in small communities of ten to thirty families, where access to their work will not be burdensome, and where the ladies and younger members of the families may have easy access to the social intercourse so much desired by them, and where town conveniences may be easily enjoyed. Also pardon me if I am too radical in suggesting that producers who actually live on the farm, or in one of the small communities, and actually engage as their principal occupation in the production of commodities from the soil be given some advantage in the nature of taxation over those who live in the towns or cities, and are consumers only of that which comes from the soil. I would suggest that the income tax law be made to apply to everyone above the age of twenty-one years, and further suggest for the serious consideration of those in authority, simplifying the tax law so that a man of reasonable intelligence and experience can make the return, and then make the tax to each individual a minimum of $25.00 to be called a license or poll tax, and graduate the tax on incomes over and above $100.00 in an equitable way, and do away entirely with the so-called excess profit tax which causes a feeling of unrest and often a misunderstanding of the real results of industry, thereby tending to increase speculation in a way that is not to the best interest of the country. I would relieve from the minimum tax of twenty-five dollars, and also other taxes on incomes of less than $5,000, those who are living on the farms, or in small rural communities, and who are actually engaged in producing from the soil as their principal occupation by donating the amount of the tax as a federal bonus if it cannot be arranged otherwise to meet the demands of the constitution.

CAPITAL, LABOR, PUBLIC.

The relations between capital, labor and the public is more difficult to discuss than would have been the case some years ago when labor was a more distinctive class than can be the case in this generation. At one time capital was almost to the point of segregation and because of its favored position became more or less arrogant, and invited, by its methods, the antagonism of all who were not in the class commonly designed as capitalistic. This antagonism became so pronounced that sentiment was crystallized into a law commonly known as the Anti-Trust Law, which had much merit in it, though a considerable quantity of injustice, and it is an open question and subject to argument today whether the so-called anti-trust law was for the good or harm of the public generally, Certainly we are reminded that certain interests declare the law was not intended to affect them, and if that contention be true, then the injustice of the law is beyond question, for any law that applies to one class of the law-abiding citizens, and does not apply to all others, is unjust in its intention and application.

Even though costs be excessive, because of the dissolution of the trusts, I am satisfied the law is a good one, and that it would be much more preferable to pay the additional costs than to build up in this country a commercial aristocracy which could readily become more powerful and more intolerant than the political aristocracy of the old world has proven to be. The tendency, however, for some years was to be intolerant of capital and often gross injustice has been done it. The politician of small calibre has taken advantage of an uninformed and prejudiced public opinion, and has fanned the feeling of antagonism into excesses that often have been more tolerant and unjust than any action of which the so-called trusts were guilty. Capital as represented by the railroads has been seriously discriminated against, with the consequent effect that railroad service has been badly crippled, and the credit of the organization so demoralized that necessary equipment of the old lines and extension of new lines, even where badly needed, is an impossibility. The unfortunate attempt on the part of the government to operate the roads has proven to be disastrous, and with the exception of a very small proportion of the population who have profited directly

through political control, the masses of the people became disgusted and disgruntled and demanded that the roads be turned back to the owners to be operated by them under proper restrictions.

The fact that practically 85 per cent of the street railway lines of the country are in the hands of receivers, and with not one of them proving to be an attractive purchase, indicates that municipal sentiment has not been fair to these properties. I mention these facts solely to impress upon you the idea that capital is often damned unjustly instead of damning.

What constitutes labor, and who is considered the laboring man? As I see it, labor is represented by that element who, by their brain or brawn, or both, makes the wheels of progress go around, and it is immaterial whether the labor be performed in the field, the workshop, the store, the office, the school-room, the pulpit, or in any of the walks of life where progress and happiness is intended to be the result of the efforts expended.

I am much afraid that labor as at present understood, or as it is preached in certain quarters, consists solely of that element who use their brawn, and all other classes of labor are looked upon more as unnecessary afflictions. Assuming the erroneous idea that labor consists solely of that class who work with their hands is the true definition, we must and do cheerfully admit that such representative of society is due a full measure of the good things of life, and that common justice demands that he who is instrumental in such a large way in supplying that which the world must have is justly entitled to a fair share of both the luxuries and necessities of life, and we rejoice that today labor occupies a position in the world that it is justly entitled to, and if I am not in error the dignity of labor with the hands will always be recognized by the public at large. Labor, or its representatives alone, can change public opinion from its present favorable attitude, and it is the sincere wish from all sections of society, or walks of life, that he who works with his hands will not permit himself to be misled into an attitude that is indefensible, and that only can result in disastrous results to himself and to the world at large. Unfortunately there has entered into the organizations of labor, (and I speak of the organizations because they assume to represent labor, and apparently are so recognized by Government) a vicious and unruly class which apparently have either influenced or frightened the leaders into an attitude towards society and towards capital that is unhealthy and injurious to the entire body of labor as well as capital. When labor as represented by its leaders contends that a regularly enacted law applies to one class of our citizens, and does not apply to the man who works with his hands, his position is so vulnerable that it cannot be sustained and when leaders take the position that regularly convicted criminals must not be punished, a situation exists that cannot but produce a feeling of antagonism on the part of all other classes to the detriment of those who assume such an attitude. Congress passed laws that were to be effective against one class of citizens or callings, and not another, and proved their cowardice in doing so upon the demand of one class. A labor autocracy is equally as objectionable as a capitalistic autocracy.

It is not my purpose to couple the more intelligently managed labor organizations with the organizations that are vicious in their attitude to society and Government, but it is my opinion that leaders of the better class have been influenced to turn their attention to the radical views of the radical element, and have seriously suffered in weakness, such weakness being produced by fear of losing their positions as leaders. What is the result? Radical agitation within the organization at first, and then its spread to the outside, and we have Bolshevism and Anarchy openly advocated by a most influential element of the labor forces. One of the leaders of the railroad union advocates forcibly, though legally, taking the railroads from those who own the property and turning the property over to the organization he represents, and unfortunately many railroad men fail to see the injustice of such a move. Another leader testifies before a Senate Committee that he is against God and government, and yet he is permitted to be at large instead of being confined in an insane asylum. Certain leaders profess to be ardent advocates of freedom of thought and action, yet they are so inconsistent as to advocate the policy of the closed shop. They are hypocritical in one of the positions, and are intentionally attempting to continue their deceptive attitude towards the public. They also demand that all public officials who refuse to obey without question the demands of a comparatively small minority of the citizenship of the country be retired to private life, and openly state it as their intention to use the power of their leadership to that end. The public have been trustful in the past and refused to see the carefully concealed leopard spots, but the attitude of certain leaders has opened the eyes of the public and they are beginning to understand the difference between labor and leaders who have become drunk with power, and will in due time take such steps as are necessary to convince the leaders that the American people, and not the leaders of a small minority, are supreme. If the principles advocated by the Bolshevists, Anarchists, and I. W. W. organizations are to prevail, and the leaders of the conservative organizations do not change their attitude to one of defiance and hostility, not only will their organizations be destroyed, but society as at present organized, which represents religion, purity of thought and purpose, the home and chastity of loved ones will go down with it. The vicious principles of Anarchy and Bolshevism, or even radical Socialism, cannot exist and live side by side with common decency and virtue.

The public whose comfort is just as important as is that of either of the other two classes should demand that honest and sympathetic effort should be made between capital and labor to settle in a just way all disputes that may arise between them, and when such is impossible the public should demand a public tribunal that will be vested with authority to settle justly the differences as they exist, but first the public should demand that capital be incorporated so that its verdict can be enforced, and should also demand that labor organizations be incorporated so that verdicts may be enforced when labor is found to be in error. A contract that is not enforceable on both parties is unfair and each party should be required to place themselves as equal before the law. Labor and capital should work out in their own way the amount each is justly entitled to, unless the process of settlement interferes seriously with the comfort of the public who represents the large majority.

The public should insist that merit be regarded, and that neither capital nor labor shall make such rules as will prevent anyone whose ambition, intelligence and energy prompts them to reach the higher stations of life. The public should insist that our form of government makes possible the advancement of everyone who will prove to have the character, intelligence and energy to climb to the more advanced positions, and the public should not tolerate any rules or regulations from any source that prevents such a one from exercising his or her talents so that the individual and the public may profit because of such efforts.

The public should demand that all enemies of organized society, as represented by our government, should be refused residence with us, and those who are now here the public should demand that they be deported. The public should demand of the government the enactment and enforcement of laws that will imprison all enemies of government, who, unfortunately, are citizens of our country and cannot be deported.

Rules by any organization that encourage a lack of industry are pernicious and should not be permitted to exist. Full production and a busy life are essentials of happiness, and any idea of indolence fostered by any man, or set of men, is against the public interest and should not be permitted to exist.

STATE ASSOCIATIONS.

The American Association is so constituted that its activities are of necessity confined to matters affecting the industry in a national sense, while the State Associations are largely local and confined to the boundaries of the state in which they are located. There is no question as to the practical value of the State Associations, and it is difficult to conceive of anyone minimizing the good effects of such organizations and failing to actively cooperate in making them successful instruments for the good of the industry in the immediate territory occupied by the individual mill. The ideal condition would be for each state to have its active state organization to serve in all matters of a local nature, and depend on the American Association to manage all matters of a national nature, and to act as a clearing house for the various State Associations. It is my pleasure, as I conceive it to be my duty, to urge all members of the American Association to become affiliated with their several state associations, and give them the thought and time necessary to make them really effective, and to cordially support them in their necessary and important activities.

Owing to the very loyal and courteous aid given by your most efficient secretary-treasurer, Mr. W. D. Adams, my duties have been anything but burdensome, and I wish to not alone express my gratitude to Mr. Adams, but to commend him to you as one of the most capable, loyal, and courteous gentlemen it has been my good fortune with whom to be placed.

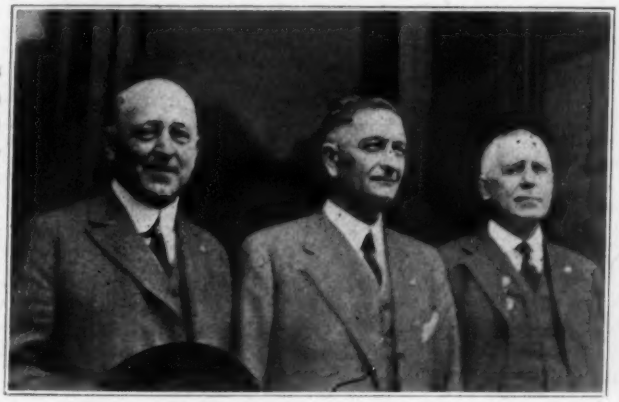
At the conclusion of this address on motion of D. Y. Cooper, the unanimous thanks of the association was tendered President Hammett for his conscientious work during the past year.

Captain Ellison A. Smyth then took the floor and after a tribute to President Hammett's father as one of the pioneer cotton manufacturers of South Carolina concluded a happy presentation speech by presenting the association gold medal to the retiring president.

Next on the program was the report of the secretary-treasurer which was read and approved.

President Hammett then introduced Stuart W. Cramer who talked briefly on the question of federal taxation. The fact that Mr. Cramer has been for some time past connected with the Bureau of Internal Revenue at Washington made his remarks of especial interest to the assembled manufacturers.

Mr. Cramer advised that his principal object in speaking was to utter a word of caution to the mills in the payment of their federal taxes. The Bureau of Internal Revenue, he pointed out, is at present greatly handicapped by the class of employees that are or can be employed because of the low salaries which the government allows it to pay. These men, while meaning well, often make rulings that are neither correct nor just. The speaker suggested that it would be well to write in red ink across the tax blank and across the check which was used to pay federal taxes the words "Paid Under Protest" which will allow a claim to be made in case any changes are made in the rulings and always gives leeway should something develop. This, he said, is a habitual practice with the best corporation lawyers.



THE THREE MUSKETEERS.

Left to Right, Arthur Draper, Vic. Montgomery and Bishop Hammett.

Another subject discussed by Mr. Cramer was depreciation. In the past the charging off for depreciation is something that has been somewhat intermittent while in connection with federal taxes the proper charging of depreciation is continuous in order to return the capital of the organization to its stockholders. Depreciation in this sense means wear and tear. Of late obsolescence has been added to the tax report which means an allowance for machinery that has become obsolete.

While on this subject of depreciation the speaker indicated that it was his experience that depreciation has been added regularly to the tax report during the past few years while frequently in the earlier years the depreciation charge had been varied or entirely omitted in some individual cases. During the past few months officials of the Bureau of Internal Revenue had been investigating these depreciation charges rather closely and because of the inequalities found a ruling was made to allow the withdrawal of depreciation charges when excessive while those who had made no depreciation charges were com-

pelled to charge off some certain depreciation for each year.

Another point made by the speaker was that all major repairs must be charged to the depreciation account and it was his opinion that major repairs made in the past should be credited. He advised the mill men to discuss these questions frankly and in an amicable manner with the field men of the bureau when they come to the mill office. "Explain to them just what you think of this depreciation charge and what the charge in the prior period should be." It was his belief that such an attitude would be met in the proper spirit by the field men to the satisfaction of all concerned. However, Mr. Cramer advised further that in case the mill manager and the field men were unable to get together on what they considered a reasonable return that the mill manager should refuse to make an amended return that he did not believe to be fair and right. "Make a deliberate and friendly effort to get together", advised the speaker, "and then of not satisfied make an appeal to the Bureau of Internal Revenue and if they in turn refuse to give satisfaction the case may then be taken to court".

Another point cleared up by the speaker is that purchasers of old mills could insert the purchase price paid which would set the valuation of the property back of which no field man could be allowed to go. The price thus paid would constitute the starting rate.

In discussing stock dividends Mr. Cramer severely criticised the Federal Trade Commission because of their attitude in this mattter. A firm may keep its profits as surplus and it is not disturbed even though it keeps these profits over a period of years, but just as soon as this surplus is distributed as a stock dividend it immediately arouses suspicion. However, Mr. Cramer pointed out that stock dividends could be taxed, just the same as an excise tax may be issued on capital. This he stated was the opinion of the best lawyers.

This question of stock dividends lead to a discussion of the bonus bill. Mr. Cramer advised the mill men that if they objected to a ten per cent excise tax on their stock dividends they had better voice their objections otherwise it is probable that such a proposition would be put through Congress. He stated it as his opinion that taxes on sales would be a better plan than an excise tax as it would be more widely distributed than would be the case under the stock dividend plan.

Amendments of interest to sales agencies had been introduced by Mr. Green of Iowa on May 22 under the title H. R. 14197. This is intended to be an aid to personal service corporations where the capital stock invested is comparatively small in proportion to the personal service rendered by the members of the corporation.

Another amendment introduced by Mr. Green on the taxing of capital assets is numbered H. R. 14198. Mr. Cramer advised the mill men to look up both of these amendments.

Another amendment that is being brought forward is intended to limit the time during which the government may go back and revise income tax returns.

Commenting on the excess profits tax Mr. Cramer declared this was a war measure pure and simple and under present conditions promises to be unworkable and will probably be replaced. This can only mean the levying of new taxes to replace this federal income. In the speaker's opinion, while there might be some change in the income tax curve, such a change would be of small moment. He expressed it as his opinion that an undivided profits tax may be adopted as it seems probable that such a tax would fall heavily on large trusts with watered stocks.

In conclusion Mr. Cramer took up the question of the tariff and pointed out that one of the errors in the present tariff law was caused by a comparison of English and American costs as compiled by the tariff board. The speaker declared that costs of manufacturing in England could not be compared with the same costs in southern mills because these southern mills have very large village and welfare expenses which is not the case with English mills. He pointed out that no credit was given for such village expense in the last bill and in his opinion this was an important point for the mill men to bear in mind when new tariff legislation was brought up.

At the conclusion of Mr. Cramer's remarks a motion was unanimously passed thanking him for his labors in behalf of the association in national mattters.

President Hammett then called for the reports of the various standing committee chairmen which were received and approved.

The following officers were elected for the ensuing year:

For President— Allen F. Johnson of Georgia—North Carolina.

For Vice President—L. D. Tyson of Tennessee.

For Secretary-Treasurer— W. D. Adams of North Carolina.

For Chairman, Board of Governors— C. E. Hutchison of North Carolina.

For Board of Governors:

Augustus W. Smith of South Carolina succeeding Emslie Nicholson of South Carolina.

J. D. Massey of Columbus, Ga., succeeding A. W. McLellan of Louisiana.

Thomas C. Leake of North Carolina, succeeding C. E. Hutchison of North Carolina.

With the election of Allen F. Johnson as the new president, President Hammett called him to the chair and relinquished the gavel with appropriate remarks. President-elect Johnson thanked the members for the honor conferred upon him but stated that as the hour was late he would inflict no speech upon them. However, inasmuch as he had just returned from a rather extensive trip over some seventeen or eighteen states he did wish to call attention to the shortage in the food supply of the country. Cotton prospects in the western end of the cotton belt were considerably better than in the eastern division but grain crops were very poor throughout the entire section. He emphasized the importance of producing food crops and urged the membership of the association to lend their aid in inducing the planting of a very full food crop in every section upon their return to their homes.

General L. D. Tyson of Knoxville, Tenn., who was elected vice-president and C. E. Hutchison, of Mount Holly, N. C., who was elected chairman of the board of governors, each made a brief but appropriate response.

This concluded the business of the association and final adjournment was taken.

The Growing and Handling of Cotton

BY ALBERT L. SCOTT.†

The difficulties involved in growing cotton have been heralded in the press, discussed on the hustings, elaborated in the Pullman car and even proclaimed from the pulpit, until the public mind has become atrophied on the question. Today, it seems to be the fate of any one who issues a note of warning as to the present backward trend in producing cotton, to be met with a polite audience, possibly, but with no constructive or enthusiastic cooperation looking to improvement. It will be interesting, I am sure, to see in concise form the facts regarding cotton consumption and production.

TABLE A. (Compiled by John A. Todd.)
Figures for the world.

Year	Mean Crops	Mean Consumption Bales	Balance on Shortage Bales	
1904-5	19,648,000	17,726,000	1,920,000	over
1905-6	17,266,000	18,214,000	948,000	short
1906-7	20,815,000	19,523,000	1,292,000	over
1907-8	17,564,000	19,393,000	1,829,000	short
1908-9	20,229,000	19,828,000	401,000	over
1909-10	17,216,000	19,148,000	1,932,000	short
1910-11	18,854,000	20,222,000	1,368,000	short
1911-12	22,157,000	21,495,000	662,000	over
1912-13	21,503,000	22,302,000	799,000	short
1913-14	23,309,000	22,296,000	1,013,000	over
1914-15				
1915-16				
1916-17				
1917-18	Figures not yet available.			
1918-19				
1919-20				

TABLE B. (American Crop and Consumption.)

Year	Commercial Crop	Consumption Bales	Balance on Shortage Bales	
1904-5	13,656,000	12,664,000	992,000	over
1905-6	11,443,000	12,081,000	638,000	short
1906-7	13,735,000	13,203,000	532,000	over
1907-8	11,456,000	12,112,000	656,000	short
1908-9	13,831,000	13,157,000	674,000	over
1909-10	10,592,000	11,754,000	1,162,000	short
1910-11	11,986,000	12,054,000	68,000	short
1911-12	16,108,000	14,515,000	1,593,000	over
1912-13	14,106,000	14,715,000	609,000	short
1913-14	14,882,000	15,541,000	341,000	over
1914-15	15,108,000	13,834,000	1,274,000	over
1915-16	12,038,000	14,812,000	1,874,000	short
1916-17	12,941,000	13,906,000	965,000	short
1917-18	11,907,000	12,282,000	375,000	short
1918-19	11,640,000	10,620,000	1,020,000	over
	195,429,000	197,250,000		

1,821,000 increase in consumption over production.

There is no widow's cruse of oil from which we can continue to draw more cotton than we produce, we cannot depend upon a miracle to help us. The facts show that more cotton from the American crop has been consumed than grown in the last fifteen years and we now face a demand for cotton unparalleled in history with no adequate provision for meeting it.

On the contrary, the tendency is to produce less cotton, due to a variety of causes more or less familiar. (a) The boll-weevil, pink boll worm and other pests that are wide spread every year and no sure method of combatting them has as yet become generally known, especially in areas newly ravaged. (b) There has been a persistent propaganda by state and government agencies and from private sources urging farmers to diversify their crops, plant less cotton and more wheat, vegetables, and fruit. During the war this was made a measure of patriotism. (c) There has been a most alarming exodus of farm labor from the South making it difficult, if not impossible, in many places to get hands to work cotton. (d) The high wages paid on public works, road building, etc., have attracted many farm laborers from the fields.

In the face of these very evident and incontrovertible facts what should the manufacturers do?

(a) We can do nothing—a "safe" policy a continuation of past procedure, but a policy which confessedly will get us nowhere so far as helping to improve conditions, or

(b) We can begin to study our problems from the point of view of properly safeguarding our raw material and such a course would involve

1. The collection of data as to production and consumption of cotton alike at home and abroad, putting such information in clear and simple form and distributing it widely to growers and consumers.

2. We should seek out and encourage all agencies, state governmental or private which are trying to grow more and better cotton. A man like David Coker of Hartsville, S. C., should be encouraged in his great work of developing better seed and might properly have the endorsement of this association. Is there a State Department of Agriculture doing particularly good work?—it should be endorsed and aided. We should try to focus all the agencies we have against the forces of nature and economics which have tried to discourage the farmer and are diverting him from growing cotton.

3. We should establish a point of contact through which growers and manufacturers might meet and we should have duly accredited representatives at meetings of cotton growers and invite their representatives to our meetings. We should provide a means of transmitting information and building up good will between the two great branches of the cotton industry—the producer and the spinner.

4. We might very properly establish a bureau to assist in disseminating information as to the best methods of fighting pests, or the value of proper seed fertilization and cultivation. We could help in demonstrating the value of modern machinery and methods and help lift the amazing pall of ignorance in which many farmers live.

We might fight consistently to have cotton purchased from the farmer at a price based on grade, to stimulate him to produce better cotton and to reward him for doing so. We certainly could protest against the present barbarous method of sampling and handling cotton and lend our united strength toward improving the present conditions.

It will be urged that manufacturers should stick to manufacturing and that, if a proper price be paid for cotton, all of these questions, under economic stimulus, will settle themselves. Undoubtedly there is some ground for this opinion, and were we not so vitally interested, such counsel might well be followed. But cotton is as necessary to us as air, and certainly we can justify such reasonable action as is proposed on the ground of insurance. Private corporations like the Goodyear Tire & Rubber Co., are growing cotton. The U. S. Rubber Co., produces ever increasing quantities of its rubber, the British are developing the growing of cotton, through their

*Presented before the American Cotton Manufacturers' Association.

†Lockwood, Greene & Co., Boston and Atlanta.

Spinners' Association, not only in various parts of their empire, but here in the United States as well.

It does not seem unreasonable therefore that we should take the modest step called for in the resolutions which I shall read and start an agency representation of all the manufacturers of cottons in the country, which agency shall have for its primary duty, the task of stimulating the growth of more and better cotton, the improvement of handling methods and the development of good will between growers and spinners.

To whom much is given, much is required. Much has been given to us manufacturers, let us give a little of it back again to promote the common weal of the industry as a whole. I take pleasure therefore in calling to your attention the following recommendations of the National Council to the directors of the National Association of Cotton Manufacturers and the American Cotton Manufacturers Association.

"At the World Cotton Conference held in New Orleans in October, there was much discussion of the growing and handling of cotton, and later the National Council of American Cotton Manufacturers appointed a committee to make a study of this question, which committee, on December 1, reported to the Council at a meeting held in Washington. The following appear to be the facts in the situation:

"1. The production of cotton in this country has been practically at a standstill during the past fifteen years. In fact, the crops of the last four years were less than the crops of 1904 and 1905.

"2. Other crops are coming in competition with cotton to such an extent that there is grave danger of their permanently taking its place in the attention of many of the farmers of the South.

"3. There are other difficulties in the way of growing cotton, such as the boll weevil and kindred pests which are apparently increasing, year by year.

"4. There is still an evident lack of knowledge among the farmers of the South, white as well as colored, as to the best means of cultivation, fertilization and general crop handling.

"5. Ginning and sampling methods are insufficient and wasteful, and have shown little improvement during the past twenty years.

"6. There is an acute labor shortage in many parts of the South, and there seem to be no well-formulated plans looking to an increase in the supply of labor.

"7 There is an increasing demand for quality and staple cottons, which wisely employed, will permanently assure to the cotton grower higher prices for his product.

"In view of all the above facts, the National Council recommends to the two associations the following action:

"(1) The establishment of a Bureau of Cotton Growing, to be conducted under the auspices of the National Council.

"(2) This bureau shall be under the direction of a salaried expert, and shall perform the following functions:

"(a) Cooperate with all state boards of agriculture, agricultural colleges, the Bureau of Standards, and the Department of Agriculture to assist in the disseminating of information as to the best methods of seed selection, fertilizing, cultivation and merchandising of cotton.

"(b) Get in touch with all research organizations, such as the National Research Council and the Provisional Research Committee of the International Cotton Conference, in order that the work being accomplished by these organizations may be placed at the disposal of cotton growers, manufacturers and others interested.

"(c) Stimulate proper publicity as to the desirability of improving the methods of growing and handling cotton.

"(d) Keep in touch with the cotton growers' associations, have representatives attend their meetings, ascertain their problems, and present to them the views and needs of the manufacturers, emphasizing at all times the methods whereby the grower can improve the quality and thus increase the return from his product.

"(3) This bureau shall be supported by a fund raised jointly by the American Cotton Manufacturers' Association and the National Association of Cotton Manufacturers.

"(4) Thirty Thousand dollars ($30,000) shall be the amount of such fund, to be expended during a two-year period.

"(5) If, during this two-year period, it develops that a larger sum can be expended with profit, measures shall be taken to raise it.

"(6) Members of the American Cotton Manufacturers' Association and the National Association of Cotton Manufacturers shall be requested to contribute to the initial fund on a spindleage basis.

"(7) The expenditure of any sum or sums thus raised shall be subject to such regulations as shall be determined upon by the National Council of American Cotton Manufacturers."

Home Building for Wage Earners.

The housing problem, which first became acute during the war, is now demanding more and more attention from manufacturers. Busy executives with the affairs of large plants in their charge have had to turn aside and take up the many-sided problem of industrial housing. The housing of operatives today is more than a building problem; questions of finance, of management, of town planning, of architecture, of hygiene and of sociology, all have a bearing upon it, and must be considered if an employer is to carry out successfully a housing enterprise.

A 56-page booklet with the foregoing title has been published by Fred T. Ley & Co., Springfield, Mass., and they are now issuing it to all who apply for copies. It will doubtless prove useful to those seeking a solution of their housing problem. The work was prepared by Leslie H. Allen, of the Ley company's staff, who is a member of the National Housing Association, and the committee on concrete houses of the American Concrete Institute, chairman of the monolithic house committee and secretary of the committee on finance of the National Conference on Concrete Houses.

Tupelo Cotton Mills, of Tupelo, Miss., are sending out with their compliments to their customers and friends a 104-page booklet entitled "Hambone's Meditations" which is replete with the humorous and witty sayings of "Hambone," a typical southern negro originated by the well known artist, J. P. Alley.

Aniline and Its Uses in the Dyeing and Calico Printing Trade

BY WILLIAM B. NANSON.

PART THREE.

There are three methods of dyeing oxidized aniline black, (1) the one bath black in which the dyeing and oxidizing take place at the same time in the bath, (2) the aged black, (3) the steam black.

The one bath method of dyeing aniline black consists in treating the material in a bath containing a mixture of aniline, bichrome and mineral acid. The method is simple, and the black produced rubs badly, but the strength of the fiber is not affected. The cotton may be softened and the fastness to rubbing somewhat improved by oiling or soaping after dyeing. A one bath black is frequently dyed on a bottom dyed with a substantive or a sulphur black. Following are several methods for dyeing 100 pounds of yarn:

Method 1. The dyebath is prepared with 10 per cent aniline salt, 14 per cent hydrochloric acid 36 degrees Twaddle, 3.5 per cent sulphuric acid 168 degrees Twaddle, 13 per cent sodium bichromate. Enter the material and work for a half an hour cold, heat to a boil during 30 minutes and work for a quarter of an hour. Rinse thoroughly, soap at the boil.

Method 2. Work the material for about two hours in a cold solution containing 10 parts aniline oil, 20 parts hydrochloric acid, 20 parts chrome and 10 parts ferrous sulphate (copperas). The ferrous sulphate here employed is oxidized by the chromic acid to a ferric salt which serves as a carrier of oxygen to the aniline. This method of dyeing is easily carried out and gives a good black; since much of the coloring matter is precipitated on the fiber superficially, as in the bath itself, the color has the effect of rubbing off, but we have previously shown how the defect may be remedied to a large extent.

Method 3. Mix 6 pounds 9 ounces of aniline oil with 8¾ pounds of hydrochloric acid at 32 degrees Twaddle. Let it cool and then add the solution of 4 pounds 6 ounces of chlorate of potash in 66 pints of water. Then add 43¾ pints of chloride of iron at 30 degrees Twaddle. The stock, previously scoured, is placed in this mixture, which must be cooled down with cold water to 100 degrees F.; lift and neutralize with soda, wash and steep for half an hour in chrome, 7 ounces dissolved in 33 pints of water at 112 degrees F.; wash and work in 17½ ounces of aniline oil and 2 pounds 3 ounces of potash in 33 quarts of water, and wash well. This black will not rub off.

Method 4. A one bath black, which is largely used in France, is a jet black, practically ungreenable and is dyed as follows: Solution (a), 6 pounds of aniline oil are dissolved in 9 pounds of hydrochloric acid, 12 pounds of sulphuric acid, and 20 gallons of water. Solution (b), 12 pounds of sodium bichromate are dissolved in 20 gallons of water. Equal parts of (a) and (b) are mixed in an earthenware vessel and 2 pounds of stock are worked quickly in this bath. A bronzy black is developed within one or two minutes. When all the stock has been impregnated in this manner it is well wrung or extracted and steamed for 20 minutes at 3½ pounds pressure. The stock is finally rinsed and soaped as before. The utility of the steaming is based upon the fact that a black produced at an elevated temperature does not green so readily as one dyed in the cold.

Method 5. This is a prize French recipe. Mix 5 liters of aniline oil with 10 kilos of hydrochloric acid at 22 degrees Baume; allow this mixture to crystallize. Dissolve the crystals in warm water and add the solution to the cold dyebath of about 1,000 liters. To this add 6 kilos of potassium or sodium bichromate previously dissolved in water, 600 c. c. of a solution of chloride of iron at 40 degrees Baume, and 600 c. c. of sulphuric acid. Stir the bath, enter the stock, work quickly until the color develops uniformly, and work for one hour cold. Heat gradually to the boil, add 2 kilos of potassium bichromate, work well and allow the stock to remain in the bath for about ½ hour at 176 degrees Fahrenheit, rinse well, soap boiling and finally rinse.

Method 6. Boil the stock off thoroughly and then sour for 15 minutes in a weak sulphuric acid bath. The dye bath is made up in the following proportions into about 75 gallons: 6 pounds of aniline oil, 5 pounds of hydrochloric acid 35 degrees Twaddle, 4 pounds of sulphuric acid 168 degrees Twaddle. Add to this, previously dissolved in another vessel, 9 pounds of nitrate of iron at 100 degrees Twaddle. Work the goods in this bath cold for one hour, then bring the bath up to a boil in one hour and boil for half an hour. The stock should then be a deep black with a greenish tinge. Lift, expose to the air for a short time, rinse thoroughly, soap at a boil and dry. If 2½ pounds of starch be added to the soap bath the black will be found to be faster to rubbing. (Note—Always dissolve the aniline oil in the hydrochloric acid separately.)

Method 7. Cold process. Prepare the following solutions each separately: (a) 8 pounds of aniline oil, 16 pounds of hydrochloric acid 32 degrees Twaddle, 4 gallons of water; (b) 20 pounds of sulphuric acid 168 degrees Twaddle, 4 gallons of water; allow to cool (c) 14 pounds of potassium chloride, 4 gallons of boiling water; (d) 10 pounds of copperas, 4 gallons of water. Charge the dyebeck with 300 gallons of cold soft water and add one half of the solutions, a, b, c, d, in the order given. Enter the boiled cotton, which should have been well wrung or hydro-extracted, and work cold for one hour. Lift the cotton out, add the remainder of the solutions, re-enter and work for 1½ hours. Rinse two or three times, soap in 240 gallons of water, 12 pounds of soap, 6 pounds of soda ash, at the boil, wring and dry without rinsing.

Method 8. This is one of the later English recipes. A liquor is made from 3 pounds of chrome, 2½ pounds of aniline salt, 3 pounds of lactic acid and 1½ pounds of sulphuric acid for each 100 pounds of goods. The goods are worked in this bath in the cold for one hour, then

the heat is slowly raised to 180 degrees F., and maintained at that temperature for one hour. The goods are next washed well, soaped at 170 degrees F. with 5 pounds of soap, washed well and dried. This latter recipe, the reader will note, is dyed with lactic acid and aniline salt and must be ungreenable and is the latest development of direct oxidized aniline black as used by the English dyehouses of today.

All these recipes are suitable only to yarns or loose stock and cannot be applied practically to piece goods.

Aged Black.

Aged black is produced by padding the material with a solution of aniline salt, an oxidizing agent (chlorate of soda, etc.) and a metallic salt (copper, vanadium, iron, etc.) which acts as an oxygen carrier between the oxidizing agent and the aniline. The impregnation is followed by the process of ageing which continues the process of oxidizing. This oxidizing process is finally completed by chroming and soaping.

Aged black is dyed chiefly on piece goods but as it is sometimes required on yarns and loose goods we will give one or two methods of dyeing it.

For the dyeing of black on loose cotton and yarn use 120 parts of aniline salt, 40 parts of sodium chlorate, 5 parts of ammonium chloride, 3 parts of copper sulphate; then add 120 parts of aluminum acetate 21.6 degrees Twaddle and dilute the whole to a density of 12 degrees Twaddle. Impregnate the thoroughly wetted out cotton with this solution, hydro-extract, (the liquor coming from the hydro-extractor is kept) place on hurdles and dry at 95 to 104 degrees F.

The cotton must be well shaken before it is placed into the dry room as well as during ageing. When the cotton is perfectly dry, steam is allowed to pass into the ager for the purpose of completing the ageing. Ageing should be completed in from 18 to 24 hours. Develop in a bath, at 104 to 122 degrees F., containing 6 per cent sulphuric acid 168 degrees Tw., rinse thoroughly and treat with an emulsion of oil.

The chloride of ammonium is added to the bath to prevent the precipitation of the metallic oxides, i. e., to increase the solubility of the metallic salts used.

Another method is to steep the dry yarn in a cold bath containing, per 100 gallons, 108 to 110 pounds of aniline salt, 36 to 40 pounds of sodium chlorate, 13 to 15 pounds of copper sulphate, 25 to 30 pounds of aluminum acetate at 15 degrees Tw., and 5 pounds of wheat starch. The liquor should have a density of 7½ degrees Tw., at which it must be kept during dyeing, by adding a sufficient quantity of the stock solution mentioned.

After steeping, the yarn has to be well and evenly wrung and aged for about 12 hours in a warm damp atmosphere at a temperature of about 85 degrees F. The ageing is completed when the yarn has assumed a very dark green color. It should now be worked for a half an hour at 160 degrees F. in a solution containing 2½ pounds of chrome per 100 gallons. Finally, rinse well, soap, brighten with soda and treat with soap and oil.

It will be noted that this yarn was entered dry into the aniline. To accomplish this effectively and to wet out and penetrate the goods thoroughly it is necessary that the yarn should be first made thoroughly absorbent by boiling out and scouring and drying up, as already described in a previous section. Also, we might say that the drying machine and the quick ageing machine can be used for yarn in place of the ageing room as described for piece goods. All goods should, after impregnation, retain about their own weight of dye liquor when they enter the drying and ageing room. If yarn is hung on sticks in the drying and ageing rooms after impregnation with aniline the sticks should be wiped over with aniline liquor and dried before using.

The dyeing of aged black on piece goods may be carried out as follows: 120 pounds of aniline salt, 10 pounds of aniline oil, 35 pounds of sodium chlorate, ½ pound copper sulphate per 100 gallons of liquor. The goods are impregnated with this solution, aged and chromed.

The following is another method of dyeing an ungreenable black. Two solutions are prepared: (a) 55 gallons of water, 45 pounds of aniline salt, 13½ pounds of toluidine, 7 pounds of acetic acid, 18½ pounds of sodium chlorate; (b) 18½ pounds of nitrate of iron at 76.6 degrees Tw., 6 gallons of water, 27 pounds of a solution of copper sulphate (2:10). Mix 8 gallons of (a) with 1 gallon of (b) and pad with this mixture.

Another method: The pieces are padded with the following solutions, which are prepared separately, mixed when cold and made up with water to 100 gallons. The padding liquor should stand at 12 degrees Tw.; 120 pounds of aniline salt are dissolved in 26 gallons of water; 5½ pounds of copper sulphate are dissolved in 10 gallons of water; 37 pounds 9 ounces of sodium chlorate are dissolved in 7 gallons 3½ pints of water; 4 pounds of ammonium chloride are dissolved in 2 gallons 3½ pints of water. To this are added 4 gallons 6½ pints of aluminum acetate at 15 degrees Tw.

The cloth should be impregnated in such a manner that it retains about its own weight of the padding liquor.

After impregnation, the cloth should be dried as rapidly as possible at a low temperature, after which it is aged, chromed and soaped in the usual manner.

A. G. Green has an English patent for a black in which he suggests the addition of a paradiamine or of a paraamidophenol to the padding liquor. No oxidizing agents are used. The material is padded with the following solution, aged on the quick ager as usual, rinsed and dried, or the ageing may be followed by an after treatment with bichrome and soaping.

The padding liquor for this method comprises: a solution of 48 parts of copper chloride, 140 parts of ammonium chloride, and 14 parts of sodium metabisulphite in 500 parts of cold water which is added to a solution of 50 parts of aniline, 2 parts of paraphenylenediamine, 15 parts of hydrochloric acid (30 per cent) and 15 parts formic acid (90 per cent) in 1,500 parts of cold water.

Another aniline black liquor which gives good results is made from 4 pounds of aniline oil, 3 pounds of hydrochloric acid, ½ pound of lactic acid, 18 ounces of sodium chlorate, 1½ ounces of copper sulphate with sufficient water to make 2 gallons.

The Calico Printers Association of England have patented a process for the production of aniline black by the use of mixtures consisting of (a) aniline; (b) certain primary aromatic amines; (c) hydrochloric acid; (d) formic acid; (e) chlorates of the alkali metals as oxidizing agents;

and (f) one or more catalysts, copper or vanadium salts, alone or with an organic catalyst.

This is on the same order as Green's black just mentioned and if correct proportions are used, the oxidation of the bases takes place rapidly upon development by ageing or steaming smoothly and completely, and leads to the immediate formation of ungreenable aniline blacks practically free from the unstable intermediary products.

The extent to which it may be advantageous to use amines other than aniline in conjunction with aniline depends mainly upon the relative cost of these amines, and on the shade and quality of the black required. Amines substituted in para in relation to the amide group cannot be used to advantage in excess of three molecular proportions out of a total of eleven molecular proportions. The blacks produced by the oxidation of mixtures of bases of the benzidene series and aniline are distinguished by remarkable coloring power and, in some respects, greater fastness than the ordinary aniline black. The chloranilines, and more particularly orthochloraniline, yield blacks of remarkable fastness to chlorine. The other bases claimed under (b) give blacks which, except for some slight variation in the shade, are not materially different from the ordinary aniline black.

In most cases it has proved beneficial to use an organic catalyst, para-phenylenediamine or its homologues, or para-aminophenol or its homologues, in addition to the mineral catalyst. These bases are employed in the form of their hydrochlorides. This process is carried out somewhat as follows:

Method 1. Aniline oil, 39½ parts; aniline salt, 6½ parts; benzindine dihydrochloride, 1¾ parts; formic acid (90 per cent), 65 parts; lactic acid (30 per cent), 30 parts; sodium chlorate, 28 parts; copper chloride, 7¾ parts; water to make 1,000 parts by volume.

Method 2. Aniline oil, 20 parts; aniline salt, 30¼ parts; dianisidine dihydrochloride, 15 parts; formic acid (90 per cent), 60 parts; paraphenylenediamine dihydrochloride, 3½ parts; sodium chlorate, 31½ parts; copper sulphide (24 per cent), 31 parts; water to make 1,000 parts (all by weight).

When preparing, the formic acid should be added to the water, then the anilines, the acids, and the salts of the bases added to the warm water; then cool off and add the sodium chlorate in solution. The copper salts should only be added immediately before using. The substitution of other soluble copper salts for the copper chloride used in these methods is practicable, but the use of copper sulphate involves a slight reduction and the use of copper salts of the weak acids and a corresponding increase in the proportion of mineral acid. Similar alterations are necessary when substituting the copper sulphide by other insoluble salts. As a rule, these substitutions are not beneficial. The copper sulphide is made by precipitating a hot solution of sulphate of copper with sodium sulphide made by boiling flowers of sulphur in a solution of caustic soda. The black precipitate merely requires to be collected and washed, to be ready for use.

It has been found, however, that the addition of boracic acid to the mixtures is a pronounced improvement owing to the danger of careless over drying which leads to irregular results and tender goods and loss of aniline. In this case the baths contain aniline, hydrochloric acid, formic acid or equivalents of these, chlorates of the alkali metals oxidizing agents, catalytic agents as in the previous methods, with the new addition of boracic acid. The following is an example of an aniline black mixture containing boracic acid:

Aniline, 39½ parts; aniline salt, 6½ parts; dianisidinedihydrochloride, 25¼ parts; paraphenylenediamine dihydrochloride, 1¾ parts; formic acid (90 per cent), 65 parts; lactic acid (30 per cent), 30 parts; boraric acid, 3 parts; sodium chlorate, 28¼ parts; copper chloride, 7¾ parts; water to make 1,000 parts by volume. With this mixture the fabric may be dried at a temperature materially exceeding 158 degrees F. either by hot air or on the drying cans, the black is developed by a short steaming without any material danger of tendering and it does not require chroming.

The use of boracic acid permits of a reduction in the relative proportion of the catalysts as compared with mixtures of similar composition from which the boracic acid has been omitted and a distinct advantage both in respect to the cost of the aniline black mixture and of the quality of the black produced. It is essential that the oxidizing agents liberated from the chlorates should be absorbed by the bases as rapidly as they are formed, otherwise formation of oxycellulose and consequent tendering takes place. This condition of rapid absorption is insured by the composition of the aniline black mixture.

Owing to the fact that under working conditions the formation of the intermediary products of the nigraniline series and their virtually complete condensation with primary amines to products of the ungreenable aniline black series takes place in one operation, the effect of the partial substitution of aniline by other bases is frequently much more pronounced than the effect of a similar substitution in ordinary aniline black mixtures. These substitutions lead to useful results in a number of cases. Thus the use of dianisidine in connection with aniline as illustrated by methods given leads to very dense and very ungreenable blacks. Benzidine and toluidine give similar but somewhat browner shades of black.

Aniline Steam Black.

Steam black is produced by padding the cotton pieces with a solution containing aniline salt, sodium chlorate and yellow prussiate of potash. This is followed by steaming in a rapid ager of the type described in a previous section for about two or three minutes and by chroming for about one minute in a solution of potassium bichromate (5 pounds per 100 gallons) at 122 degrees F.

The continuous process range may be used to advantage for this style of work. The following padding solution is recommended: 40 pounds of aniline salt dissolved in 6 gallons of water, 26 pounds of yellow prussiate dissolved in 15 gallons of water; and 15 pounds of sodium chlorate dissolved in 3 gallons of water. For very thin light goods it is advisable to make the liquor slightly alkaline by the addition of a small quantity of ammonia.

The following is a good black: (a) 180 pounds of aniline and 15 pounds of aniline oil dissolved in 40 gallons of warm water; (b) 60 gallons of yellow prussiate of soda, 60 pounds of yellow prussiate of potash and 95 pounds of chlorate of soda. Put this in 40 gallons of water and

boil until all is dissolved. Boil until it looks yellow. Then filter through burlap into a stock tub and cold water and add (a) to it making 200 gallons of cold liquor altogether. Pad, dry and steam 30 minutes (age), temperature of ageing box should stand between 195 and 210 degrees F. Chrome and soap as usual.

Another method: (a) 128 pounds of aniline salt, 12 quarts of aniline oil and 6 quarts of acetic acid in 45 gallons of water; (b) 46 pounds of chlorate of soda and 70 pounds of prussiate of soda in 30 gallons of water. Mix the whole by adding water to (a) mixture until it comes up to 120 gallons, then add the mixture (b) and more cold water until the total mixture stands at 10 degrees Twaddle. Dry, age, chrome, soap, etc., as previously described.

The writer does not approve of the acetic acid in this mixture as it gives a poor black. I would suggest formic or lactic acid.

It should be remembered that in the case of aniline black dyed by any formula, the intensity of the finished black depends upon the amount of liquor absorbed, and that there must be no delay in rinsing the goods in cold water after the final chroming; to lay any time in the chrome is fatal to good results.

Diphenyl Black.

As compared with aniline black, diphenyl black is ungreenable and it does not weaken the fiber. This is of especial importance in the dyeing of goods which have to be "Schreiner" calendered. The black is produced by the oxidation of either diphenyl black base, or diphenyl black oil. The latter is a solution of the base in aniline oil. Goods which have been padded with diphenyl black base may be taken over ordinary drying cylinders, but better shades are obtained by a passage through the rapid ager. After ageing, the goods are rinsed and soaped. Chroming is not only unnecessary, but produces inferior (brownish) shades. Boiling the goods before padding is not necessary.

A padding liquor for piece goods consists of: (a) 6 pounds of gum tragacanth thickening (1:10) and 7½ pounds of water. 4 pounds of diphenyl black base are dissolved (warm) in 5 pounds of lactic acid (50 per cent) and 13 pounds of acetic acid (40 per cent). Stir the tragacanth into it and add 14½ pounds of water, to make up to 50 pounds. (b) 2½ pounds of aluminum chloride at 53 degrees Tw., 2½ pounds of chromium chloride at 53 degrees Tw., 6.4 ounces of cuprie chloride at 77 degrees Tw., and 34½ pounds of water; then add 3 pounds of sodium chlorate dissolved in 6 pounds of boiling water and 1 pound of turpentine, and dilute with cold water to 100 pounds. Mix (a) and (b).

(This is the third of a series of articles on this subject. Others will appear in subsequent issues.—Editor.)

Don't think that "the little bit extra" you do on your work is not being noticed. Under present conditions the executives are always looking for men to advance to higher positions and naturally will look toward the man whose ways are indicative of the fact that he is interested in his work.

Truth is productive of utility and utility is indicative of truth.

Book Review.

The 1920 Year Book of the National Association of Cotton Manufacturers, carrying the usual title "Standard Cotton Mill Practice and Equipment," is being distributed to the trade. This publication is somewhat larger than the two previous Year Books of the National Association and contains several new features. It covers the field of cotton trade statistics very comprehensively, this data being presented both in the form of statistical tables and in graphic charts. Much of the statistical material is not found in any other publication, and a large portion of that which has been taken from recognized authorities has been rearranged in such a manner that its significance is brought out more clearly, and its usefulness consequently increased.

The book contains several articles reviewing developments in different departments of the industry during 1919, each article being written by an authority in the department of the industry referred to. The material in the book has been arranged logically with reference to the various stages of the industry from the raw material to the manufactured product and has been carefully indexed.

The book has been compiled and edited by Alston H. Garside, Statistician of the National Association of Cotton Manufacturers.

A New Benjamin Catalog.

The Benjamin Electric Mfg. Co., Chicago, has issued Catalog 22, comprising a complete listing, descriptions and illustrations of Benjamin electrical specialties. In addition to the catalog data there is a section devoted to useful information upon illumination requirements and also a chapter setting forth simple rules for laying out lighting plans for the attainment of correct industrial lighting. A numerical index gives full details covering catalog numbers, list prices, package quantities, weights and discount schedules. For convenience the material listed in this catalog is grouped into schedules, with mechanical separators, tabbed for quick reference, as follows: Schedule 1, wireless clusters and plug clusters; schedule 2, industrial lighting fixtures and reflectors; schedule 3, wiring devices; schedule 3H, attachment plugs; schedule 4, special fixtures and fittings; schedule 6, industrial signals; schedule 8, panel boards.

The Associated Manufacturers of Water Purifying Equipment will hold a meeting at Montreal, Quebec, in conjunction with the annual convention of the American Water Works Association, during the week of June 20th. This organization is maintained by manufacturers of water purification equipment in order that they may better serve their customers by an exchange of ideas. Another aim of the association is to secure uniformity of contracts and sizes of filters.

The Kirkpatrick Lumber & Timber Co., Birmingham, Ala., announce that they can furnish large quantities of red cedar shingles quickly from their Birmingham and Memphis warehouses. They can also furnish yellow pine lumber and timbers of all kinds.

Southern Textile Association

The 23rd semi-annual convention of the Southern Textile Association was held at Spartanburg on Friday and Saturday, May 21 and 22. The business sessions were held in the ball room of the Cleveland Hotel, convention headquarters, and the splendid addresses delivered at the two sessions, combined with the excellent entertainment features furnished by the entertainment committee and the Spartanburg Chamber of Commerce, made this gathering one long to be remembered by the more than 500 delegates in attendance.

President Cobb's questionnaire system on the subjects of spinning, weaving and power problems was continued at this convention and the profound interest exhibited by the mill men in the different reports was evidence of the success of this plan and as this system is gradually developed from meeting to meeting, there is no doubt but that it will become a determining influence in the operation of southern cotton mills.

The First Session

was called to order at 11 o'clock Friday morning by W. A. Black, superintendent of the Beaumont Manufacturing Co., and chairman of the entertainment committee. Rev. D. E. Camak gave the invocation after which the assembly arose and was lead in singing "America" by Secretary A. B. Carter. Mr. Black then introduced Dr. Henry N. Snyder, president of Wofford College, who delivered the address of welcome in behalf of the city of Spartanburg. In introducing the speaker Mr. Black stated that he was "a man whom all know, either personally or by reputation, as one who has spent his life in the molding of character and the advancement of Christianity."

Dr. Snyder opened his remarks by stating that the usual welcome address is full of praise to the convention city and rather parsimonious to those who are being welcomed. He advised that he was adverse to praising the textile features of Spartanburg as that might invite comparison, and "he is a poor sort of a liar who cannot overdo the boosting of his home town while attending a convention."

The speaker pointed out the distinctive feature enjoyed by the city in its combination of educational and industrial activities, and declared that the year which witnessed the founding of one of its great educational institutions saw the building by the same man of the city's first cotton mill. He illustrated how we toil with our bodies and dream with our minds and praised the civilization which combines these—the work of the hand and the work of the head. Here he paid a fitting tribute to the Textile Industrial Institute for the work it is doing in the preparing of young men and women for advancement in the cotton mill industry, giving them the practical side of the business, at the same time giving them education.

Dr. Snyder said that he welcomed the visitors first for what they represent. He paid a tribute to cotton, giving the biblical story of Jason's search for the golden fleece. "It is no longer necessary," he continued, "to go on such an expedition. Southern suns and southern skies have woven for the world a stuff far richer than the golden fleece of old. Economic, religious and political, every faction must have this white fabric. History can be written in terms of the advance in value of cotton. The cotton industry lies at the base of happiness."

"In the second place," the speaker continued, "I am glad to welcome you for what you are." He emphasized the fact that the fine man of the world is the one who has worked himself up to his present leadership. He said that the mill superintendent or overseer of today represents a type of leadership which denotes superiority, intelligence, efficiency, character and the capacity for the direction of labor and pointed out that such leadership does not happen but is brought about by the ability of the individual. He said that his audience appeared to be, in the main, men of the future and still had time to learn a little more. "If we are facing a changing world," he said,

H. H. BOYD, THE PRESIDENT ELECT.

"we are young enough to adjust ourselves to it."

Thirdly, the speaker said he had been told that the men whom he was addressing were the "lubricants of the cotton mill industry," the measures of that industry. You are concerned with a money dividend, with the amount and quality of your product, he continued, and rightly you should be, for that is what business is for. But you are also the human touch in a great industrial situation. We have passed that era in which labor was a commodity, when dividends amounted to a question of mere monetary profits. He declared the question today was not a question of what shall be the profit in money alone, but what kind of people are being turned out. The task of the present day mill man, he continued, is educational as well as industrial because his task has to do with the making of character.

"Your operatives have," the speaker brought out in conclusion, "the same hopes, the same appetites, the same aspirations that you have. Open to them every door of opportunity that has been opened to you. It is the character and intelligence of the great mass of workers that will protect our businesses. You are the human equation of this great industry. I call to you as Americans to be careful to make the men and women under your direction a wiser, better and happier people."

SOME SPARTANBURG SNAPSHOTS.

The response to the address of welcome was made by Gordon A. Johnstone, agent of the Winnsboro (S. C.) Mills. Mr. Johnstone said that the textile field is facing the greatest opportunity in its history. Cotton has, after many years, come to its own and now stands at the head of all industrial enterprises of the country. However, the speaker pointed out, facing as we do this great prosperity, we must take into consideration the manufacture of men and women. We must get the fact firmly impressed upon us that we are responsible in a sense for the men and women turned out by the mills.

Over the South a great wave is going on, he continued, to secure for the operatives the education which was denied the worker of a few years ago. All kinds of welfare work are receiving more consideration each year.

The speaker stated that the time has gone when cotton mill men were considered as men without ideals and inspirations and concluded with the reading of Kipling's "If" which he urged that mill men read and re-read in order to be better fitted to fight the battles of these trying times.

At this juncture the meeting was turned over to President F. Gordon Cobb, who gave the president's address saying in part:

"We overseers and superintendents are certainly confronted with considerably different problems today than we were a few years ago when many of us were in different positions from what we are now. We received our training at the machines when everything was done so differently, that the question naturally arises, 'Have we in our present positions progressed with the times and what can we do to find out?'

"The mills are prosperous, the operatives are prosperous, but the question I am asking you frankly is, 'Have we as superintendents and overseers progressed in the management of our jobs or has the prosperity of the mills been brought about by a world condition?'

"No, by all means, no. The very fact that some mills have become prosperous has given their superintendents and overseers a chance to show what they could do. Before, the margin of profit had been so close that the mill presidents and treasurers could not afford to let their superintendents and overseers take chances on ideas, plans or system which they did not already know, from experience, were sound. But since they have had a better margin of profit and could afford to lose a few dollars on experiments, many of them have said to their superintendents and overseers, 'Go to it now; show us what you can do,' and I am very proud to say that I have heard of several presidents and treasurers who are very well pleased with the results.

"Still, I do not believe we have done anything like half as much as we should. In fact, I think we have only scratched the surface, so to speak.

"Only a few years ago 25,000 spindles was a large mill, now I ask were we ready for the management of large mills and large rooms when they came? No, we had to learn to handle them. Then came the groups of mills; did we have men ready to handle them? No.

"We are now confronted with more progress, bigger problems than mere machinery. Are we ready for them? Let's take time by the forelock and get ready for the practical problems as fast as we can.

"I am a firm believer in an old axiom which says, 'The final stage of improvement is never reached in any business, machine or person.' When a man realizes that he can practically make himself over by constant application and study he has opened the door to prepare himself to meet these new conditions. We certainly cannot sit still and see these conditions change without changing ourselves. If we do we will soon be back numbers.

"We not only must prepare ourselves for these large problems but we must do something to raise the standard of the young men who are to take our places. I feel that we are responsible for the training of the young men who are to become overseers and superintendents.

"I think I can safely say that we have passed the time when we are afraid to teach a subordinate for fear he will be given our jobs. If any of us are that narrow minded today, all I can say is that we are not broad minded enough to be overseers and superintendents.

"Training young men to become overseers and superintendents is, I believe, a vital question today because it is going to take men of large managing ability as the great industries grow larger and larger. It will not do to pitchfork into the mills young men to learn the business and then forget they are there with the expectation that in a few years they will emerge expert overseers and superintendents.

"A large percentage of young men will, if they have capacity, make a success of some minor job. The overseer or superintendent will find such a man very useful

FAMILIAR FACES SEEN AT SPARTANBURG.

and will do his utmost to hold him. That is, of course, a very natural inclination for all of us, but remember, gentlemen, that is not giving the young man his opportunity. From the viewpoint of the textile industry as a whole, that is the wrong thing.

"The labor problem is no doubt the greatest problem that confronts us today. In the mad rush we are having these days it seems some people think they have found Aladdin's lamp or that a miracle has been wrought whereby men can work less and for shorter hours than ever before and still earn money and at the same time enjoy more of the comforts and luxuries of life.

"Not only do men insist upon easier work, shorter hours, more pay and less production, but they become very much offended when the prices of goods go up. If less is produced and more consumed it would seem that prices are as sure to go up as two and two are four. People will soon begin to realize that this is a fundamental fact. Carried far enough, of course, the general desire for less work and more pay will leave the world starved and naked. Any group of people who seize the present opportunity to demand the moon will eventually be disappointed.

"We have all got to come back to sanity; therefore, I want to appeal to all you superintendents and overseers to prepare yourselves for these new conditions as I have outlined and remember that the superintendent or overseer who is absolutely square in his dealings with his people—the man who keeps a clear conscience, who tries to teach the operatives that we all go up and down together, that when the mill prospers the operatives prosper—that type of overseer or superintendent will hold the respect of both employer and employee and he will prosper."

In taking up the question of welfare work, Mr. Cobb stated that it was his opinion that in some few instances this work has been either misinterpreted or abused and continued:

"Many firms have adopted industrial democracy or profit sharing or some other plan expecting to be overrun with operatives begging for employment. In fact, I heard one advocate of industrial democracy say in a speech that in two years people would be knocking at the doors of that mill clamoring for work. Still I notice that mill still advertises for operatives.

"We cannot justly form an opinion now concerning these plans because the mills are prosperous and the operatives are prosperous, but if conditions change we will then be in a position to know whether they are best for all concerned. There are a few instances in which I believe some firms have been overzealous in thrusting what might almost be called charity onto the people. We are all human beings and when you try to thrust charity down a man's throat he is going to be offended.

"Properly conducted welfare work is the greatest boon we can give our people and I frankly believe it is our moral duty to promote this in a conservative, business-like manner, not with the idea of trying to make pets of the people, but with a view to uplifting their moral and educational standards."

The speaker then took up the subject of questionnaires, emphasizing the fact that standards are established by compiling statistics from all available information and that it is in this manner that these reports are made up. He expressed it as his ambition to see the Southern Textile Association an authority on technical problems and to have a method of compiling information which will establish it as absolutely standard information which textile students and machinery builders and all concerned can accept as coming from the highest authority on the subject, and that authority should be the Southern Textile Association.

President Cobb then introduced Marshall Dilling, superintendent of the A. M. Smyre Mfg. Co., Gastonia, N. C., and chairman of the committee on carding, who read a technical paper on this subject. This paper with the other technical papers will be found on another page of this issue, in the department entitled, "How Other Men Manage."

Mr. Dilling was followed by Carl R. Harris, night superintendent of Mill No. 3, Lancaster (S. C.) Cotton Mills, who read the report of the committee on spinning of which he was chairman.

After invitations to visit the Model Mill and the South Carolina School for the Deaf and Blind, made by Rev. D. E. Camak and Dr. Lawrence Walker, the delegates repaired to the Spartanburg Chamber of Commerce, where a delectable buffet luncheon was served them.

When the luncheon was over, automobiles furnished by the entertainment committee took the visitors to the Model Mill of the Textile Industrial Institute. Here they gathered in front of the building and were entertained by some of the students in the mill with the singing of some of the institute songs. Rev. Camak, president of the institute, then made a short talk and introduced C. H. Deal, secretary and treasurer of the mill, who told of the mechanical apparatus in the mill and of how funds were solicited for its installation and the erection of the building.

After this preliminary program the visitors were shown through the Model Mill, starting in the picker room and going through all of the processes.

The visitors were next carried to the South Carolina School for the Deaf and Blind. Here the mill men were welcomed by Dr. N. F. Walker, superintendent of the school, who told the history of the organization in a few well-chosen words. He stated that the institute was largely indebted to cotton mill men for its present status and cited instances in which some of these men had given unhesitatingly of their time and money toward its promotion. He then introduced his son, Dr. Lawrence Walker, who directed the program of entertainment arranged for the visitors.

The program rendered by the children of the school was one that will remain long in the minds of those who were present. It included vocal and piano selections by blind pupils, an exhibition in the training of deaf pupils, an exhibition in lip reading by deaf girls, handwriting and typewriting by advanced pupils, an experiment in physics and a class in calisthenics of young deaf ladies, using Indian clubs.

A feature of the program which elicited probably the most attention was a demonstration showing the wonderful work being done at the school with Ruby Miller, who came to the school six years ago, deaf, blind and dumb. After six years of patient work, however, the teachers have progressed with this little girl so that she is now

doing regular third grade work, and they have taught her to articulate a large number of sounds by the lip reading method.

At the conclusion of this program the delegates were taken back to Spartanburg and at 8:30 p. m. attended a smoker at the Chamber of Commerce. The speakers at this occasion were Rev. Camak, who told more in detail the work of the Textile Industrial Institute, W. V. Martin, state secretary of the industrial work of the Y. M. C. A., and Miss W. L. Gray, state supervisor of rural schools, who asked for the cooperation of the mill men in the eradicating of illiteracy in South Carolina.

At the conclusion of the speaking program the floor was cleared and a large number of the visitors enjoyed dancing until a late hour.

The Second Session

was called to order at 10:45 o'clock Saturday morning by President Cobb. After the appointment of the resolutions committee, the chairman introduced A. T. Quantz, superintendent of the Arcade Cotton Mills, Rock Hill, S. C., and chairman of the committee on weaving, who delivered a paper on that subject.

PRESIDENT F. GORDON COBB.

As Mr. Quantz concluded, President Cobb called on Secretary Carter to introduce the next speaker on the program. Mr. Carter then presented J. H. Separk, of Gastonia, N. C., who took as the theme of his speech, "Responsibility." His address appears on another page.

Mr. Separk was warmly thanked by President Cobb who then introduced S. B. Rhea, consulting engineer of the Victor-Monaghan Mills, Greenville, S. C., and chairman of the committee on power problems, who read a report on this subject. Following Mr. Rhea's report, there was considerable discussion by some of those present concerning some of the points brought out in Mr. Rhea's paper.

As it has been announced that the Fourth Southern Textile Exposition is to be held at Greenville during the week of October 18-23, it was voted to hold the Fall meeting of the association at Greenville in conjunction with the show and a committee will be appointed later to select the days in exposition week on which the meetings will be held.

The officers for the ensuing year were then elected. They are as follows: President, H. H. Boyd, of Charlotte; Vice-President, Gordon A. Johnstone, of Winnsboro; Secretary, A. B. Carter, of Greenville; Treasurer, Marshall Dilling, of Gastonia; Chairman of Board of Governors, Carl P. Thompson, of Trion, Ga.; four members elected to fill the places of those whose terms expire this year were: Jas. A. Chapman, of Inman, S. C.; S. T. Bennett, of Albemarle, N. C.; M. B. Lancaster, of Pacolet, S. C.; and C. S. Tatum, of Brenham, Texas.

Miss Minnie G. Cranford, who as assistant secretary has reported sixteen conventions of the association, was voted an honorary life membership in the association and J. H. Separk, of Gastonia, was similarly honored.

The president's medal was then presented to Retiring President Cobb by I. B. Covington, superintendent of The Florence Mills, Forest City, N. C. Mr. Cobb then introduced the incoming president, Mr. Boyd, who expressed his appreciation for the honor bestowed upon him and assured the association that with the cooperative efforts of the members, he would do his best to continue the success of the organization.

After the reports of the resolution and finance committees, it was unanimously voted that the new president appoint a committee of five to organize a Southern Textile Foundation, to employ an expert who will devote his entire time to collecting data from the various mills of the South which shall be available to any mill which may need advice concerning some manufacturing problem.

Following this action, President Boyd appointed the chairman of the various committees who will report at the Greenville meeting, as follows: Carding, Marshall Dilling; Spinning, Carl R. Harris; Finishing, J. W. Clark; Power, S. B. Rhea; Weaving, chairman to be announced later. The program committee includes; Gordon A. Johnstone, C. P. Thompson, and J. W. Jenkins.

The convention then adjourned.

The Barrett Co., New York City, is sending out a leaflet on "Nox-Aer-Leek," a plastic cement composed of elastic bitumen fused with non-drying oils and asbestos fiber to be troweled on to the exterior walls of boiler-settings. It is said that it makes the settings air-tight and moisture-proof.

I. B. Williams & Sons, Dover, N. H., are sending out a 56-page booklet descriptive of Williams' belts. The story of Cocheco and other belting manufactured by this company is given with views of the plant showing where these belts are made. The booklet also contains helpful belt rules.

Responsibility

BY J. H. SEPARK.

It occurs to me that of the many subjects on which I might speak at this time, there is one which has a really great place in the minds of the American people today, and this has to do with one of the real fundamentals: I refer to the great subject of personal responsibility. There has never been a time when much did not depend upon one's attitude to one's own responsibility. Those of us who have kept abreast with the ever-changing conditions, through which we have been drawn for the past five years, are keenly alive to the fact that a responsibility of today is far greater than one in former times.

We have passed through the greatest war in human history, a war which has not only shaken the very foundations of old Europe, but one which has alike affected much of the entire world. We have seen many of what we have hitherto considered the basic economic laws of the world, well nigh shattered, and upon us has devolved the responsibility of creating new economic laws throughout the world. Some of the simple laws that have been considered, in other times, as strong as adamant, have given way to the ever-changing condition of things until we have been brought to the point of the necessity of even recasting these simple processes. The attitude of man, throughout the world, has undergone changes, and some of these changes have been quite rude indeed. This, perhaps, has been but a natural consequence, for while, as an outcome of the great struggle, certain quarters of the earth have been blessed with an abundant prosperity, certain other quarters have been reduced in affluence, wealth and prosperity, until some nations are now almost tottering, and multiplied thousands, and even millions, of the citizens of these nations have been reduced even beyond the point of want. Many of the monetary standards of exchange have been greatly reduced in value until certain national credits have been imperiled. These and other factors have brought it about that there has come into men too much of the restless spirit. Many who were formerly contented, have been brought, by the very necessity of things, to more extravagant lines of life. Costs of all kinds of material, raw, partly finished, and finished, have reached very high levels. While in our own country money has been in plenty, and while there is occupation freely for every hand that would toil and for every brain that would work, there is, unfortunately, today throughout the length and breadth of the land, too much of the restless spirit.

In addition to this, and far transcending it, as it has to do with the stability of government, and the attitude of men towards government, there has been at work, the country over, certain influences which have not made for the best in government nor for the administration of government.

This brings me to suggest to you that I wish to talk to you, for these few minutes, along the line of personal responsibility, not alone of you gentlemen, who occupy the position of superintendents and managers of textile plants, but alike of the executives of these plants. For, as a matter of fact, I am one who feels that there should be a closer bond, if possible, between executive and superintendent. It is true that the average executive has responsibilities that are, perhaps, unknown to the superintendent, though it is also true that the average superintendent has responsibilities which are not known to the executive, but in all lines of activity concerning these, there should be the closest bond of cooperation and sympathy between the two.

I am sure that the responsibility, that rests on the superintendent of this day, is greater than the responsibility that formerly rested upon him, largely for the reason that conditions have changed, so rapidly at times, and so continuously, that the problems of the past have become simple in comparison with those of today. One, who gives thought to the proposition which I am now discussing, will likely think of the average superintendent as one who has as the major part of his responsibility, the production of a certain quantity from a certain number of spindles, or looms. As a matter of fact, I have come to conceive of his responsibility as something far greater than having alone to do with the utilization of inanimate machinery, plus the operation of man-power towards the production of a given poundage in a given length of time.

It was permitted me, not long since, to have a heart to heart talk with the superintendent of a mill of approximately 20,000 spindles, and I am frank to say to you gentlemen, that I gathered much choice information from this conversation, and, believing that this may be of value to some of you, I wish to bring to your immediate attention some of the things I gathered, which things I believe will be appreciated by you gentlemen as among the things which furnish the prime requisites of an efficient superintendent. May we not observe, in the first instance, that the basic requisite of an ideal superintendent, is that he must be a man who is intensly interested in his particular line of work. Without interest in an occupation no man can bring himself to the point of putting into that occupation the best of his mental and physical powers. The Divine One, centuries ago, struck the very heart of things when he gave utterance to a bit of real philosophy, which has not only become immortal in the line of the classics of Biblical writ, but alike in many languages of the earth, namely, "For where your treasure is, there shall your heart be also." So we must feel that unless we can bring ready and willing hands, and heart, and brain, into an occupation, that occupation shall mean little to us.

In the second place, the superintendent should hold it, as a major concern, to know personally those who labor for and with him, seeking diligently to learn, as intimately as he can, the likes and dislikes of the operatives; their strong points and their weak points, in order that thus knowing he may have furnished unto him the possibility of bringing greater strength to the strong points, and of bringing, out of weakness, through a constant continuous

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Presented before the Southern Textile Association.

cultivation of sympathy and comradeship, a strengthening process, even up into strength itself.

Third, he should keep himself in position to render, readily and willingly, every possible assistance to those who share in his responsibility in the handling of the operations of the mill, namely, the overseers. Perhaps an approach to an ideal condition might be reached, so far as material operations of the mill are concerned, when there can be had full cooperation between superintendent and overseer, and all other operatives of the mill. In a very large sense the superintendents sustain the same relation to the mill operatives that the captain sustains to the members of his company, and in just a little lessened power, comes the overseer as lieutenant. The lieutenant is supposed to know the will and the desire of the superintendent, and when perfectly known there should be no doubt as to efficient handling of a property.

The fourth consideration has intimately to do with, perhaps, the biggest responsibility of the superintendent, because this responsibility carries with it a very large measure of opportunity. I refer to the responsibility that devolves upon the superintendent of the average mill for the safe and sane handling of help from the point of beginning even up to the point of development into the most efficient and effective standard possible. Many superintendents, who have been in the harness for ten to fifteen years, can, I doubt not, look with pride to numbers of men who have at other times worked in their employ, but who are now similarly positioned with themselves in occupying the important post of superintendent. As I mention this fact, I am sure that there comes into the mind of more than one of my hearers, much of pleasure in the contemplation of the part that they have had in the higher development of those who labored with him.

In a very large sense those who stand at the head of great aggregations of people, have borne great responsibilities, but those responsibilities have carried with them opportunities that have been fully commensurate. This almost partakes of the quality of destiny, for, as a matter of fact, when destiny is reduced to the final analysis, it means, in practical terms, that the quality of life, and force, and power, which have been arrived at by one, is the product of all those things which have entered into the making of that quality of life, that quality of force, and that quality of power.

Much of mill life is, after all, analogous to school life: the beginning may be described as the primary grades, then, running up through the attainment of higher efficiency, to the secondary grades, then on up to the higher line of skill and efficiency to the senior grades, and thus on and on as long as one finds employment at spindle or at loom, until efficiency and skill have become in life a passion, for in that life of efficiency, when once it has been arrived at, one finds a broad field for usefulness in the realization that the production, in which he or she has had a part, is the very best possible.

At a farmers' convention held something like fifteen or twenty years ago, one of the far-seeing men uttered a very trite saying when he said, "The successful farmer of the future will be one who can cause to grow two blades where formerly one grew." That may have been a trite saying, but we have come to see that there was both vision and philosophy in that saying. Had the farmers contented themselves, within those fifteen or twenty years, in producing per acre the average yield of their fathers, we would be much nearer want in lines of food stuff, and other basic necessities, than we are today.

We, of the textile fraternity, might contemplate this development, and many of us doubtless are contemplating it, and we might draw a worth while analogy, for we have come to realize that not only does the necessity exist for the production of greater quantities per unit, but also higher qualities of production. It might not be amiss for me to say to you, in this connection, that great changes have taken place in both the spinning and weaving centers of the country. The southland occupies a position in the textile world of far greater importance than she occupied even a quarter century ago. I can pass no higher compliment upon you gentlemen than when I say to you that you have had very much indeed to do with creating this great change. Up to a quarter of a century ago the South had a well defined position in textiles so far as coarse and medium constructions were concerned, but the rapidity with which we have moved forward and upward in the development of splendid reputations for quality yarns in the finer constructions, has been little short of marvelous.

The superintendents of our southern plants have taken a keen and abiding interest in lending themselves, in the fullness of their efforts, to the making possible of such attainments, and I, for one, wish to pay high tribute to you gentlemen because of what you, within these few years, have been permitted to see achieved, even within our own midst, as a result of your splendid efforts.

As we are talking, man to man and heart to heart this forenoon, I feel that I should bring to your immediate concern something of the conditions that confront us just now. A few months since the Vice President of the United States had occasion to remark in a speech, that the world is just now turning the corner. If I may be permitted to interpret his mind I think I may say that the real thing he wished to impress upon the country is the fact that abrupt and radical changes must take place in order that there may come to all of us the safe and sane readjustment of conditions. During the past five years we have, under the stress of a very high tension, seen values and prices mount skyward until today the students of political economy and practical finance would doubtless tell us that the American dollar has shrunk in its purchasing power more than fifty per cent. Such conditions cannot last long and leave us healthy citizens under healthy national conditions. To be sure the average man has more money with which to purchase, and at the same time the average man feels that the prices of things which he has to buy, are entirely too high. Many reasons have been assigned for the very high prices that maintain, particularly on retailed articles, but I think we can all agree on this one general fundamental proposition, namely, that the greatest hope lies in our ability to increase production of food stuffs, raw, and manufactured materials. Just how this is to be worked out, I cannot say, as that depends upon the will and attitude of the people throughout the country,—those to be

found on the farms, the miners, and the people of all manufacturing lines.

There are very many factors that enter into this condition, and, unfortunately, some of these factors are beyond the control of any force that now seems apparent. As among these factors we can count the great freight congestion that is on throughout the country, as well also as the express congestion. There are today various embargoes on the movement of certain classes of freight, and we have seen, within the last few days, the heads of the great trunk lines making request for governmental assistance to the end that transportation congestion may be relieved. This tremendous congestion has tied up, not only vast quantities of raw materials, but has also seriously retarded the movement of partly finished and finished merchandise, so that the manufacturers are finding it exceedingly difficult to get all of the materials that they could utilize in their manufacturing plants. The faith, which we have in those who are trying to work out this great transportation problem, encourages us to hope that the proper solution may be found, and that, 'ere long, we shall have come into a readjustment which shall redound to the good of the entire American citizenship. In the meantime, I would suggest, in closing, that it will be encumbered upon you, as the leaders in your line, to maintain all the patience possible to exercise the very best of your judgment, and to contribute, with willing heads and hearts, your part towards the working out of this and other great problems which, either directly or indirectly, concern you.

We have a great country, a country of which we all feel justly proud, and whether some of us differ with others, it matters not, for, after all, the greatness of our country has been arrived at through the great scheme of liberty which has been given us by the constitution of our common country. Under that great document, which stands and shall forever stand as one of the greatest Magna Chartas in the history of the world, each man who can subscribe to the great document, is a citizen of this country, and to him is given the inalienable right to serve God according to the dictates of his own conscience, to ally himself with whatever political creed meets his fancy and his judgment, and to express himself in the public print, and upon the common forums of the land upon any matter concerning which he wishes to be heard. The great flag of our country is more positively the flag of all of us today than ever in the past. Much of the national bitterness, which was engendered because of the great war between the states, has passed away, and we of the South, as well as those of the North, can today stand, with bared heads, under this common flag and feel that we are brethren in a common country, ever loving the traditions of our fathers, but loving, if possible, with a greater love, the greatness and the glory of America. I would emphasize this, as strongly as I possibly can, today, gentlemen of the convention, for the reason that I can see that we can do nothing greater for our common country, than to pledge our fealty to her institutions, and to strive, with all our might and power, to make America greater and better, not alone in our own country, but throughout the world, as the great embodiment of the higher type of western civilization. If our Americanism is thus strong we can dare to combat all of the influences, open and secret, which would adversely affect the institutions of our government. May I not dare to hope that the Americanism of all of us may ever exert itself that we may find the very fullness of glory in standing four square ever for the perpetuity of those institutions which have made us great throughout the world.

The South's Interest in Education.

(*Continued from page* 568.)

one—pay our obligations, build our highways, we must do the other. We must educate our people. We cannot do the one without doing the other. On us in the South, even as on other people in all the world in all its history, rests the obligation to develop to the fullest extent every one among us, every talent that can contribute to the public welfare, until in the words of Dr. Walter Hines Page "there shall be no forgotten man," and I might add, no outcast woman, no lost waif of a child.

You have been told this morning you are Christians. You know what the central idea of Christianity is. You remember the story Jesus liked to tell of the man who had two sons, the older would have most of the property and carry on the family traditions, he stayed at home, increased the wealth and did not bring shame to the family name. The younger son wandered far afield, until weary and broken in spirit he returned and his father welcomed him and gave him another opportunity so that both might be saved. And the story of how once, willed with miraculous power with a few loaves and fishes He had fed thousands of men, women and children, the strangest words I think ever uttered, by one who could perform miracles, He said "Gather up the fragments that nothing may be lost." And that is the gospel of the Christian church; the gospel of modern democracy, of modern civilization, and that is the cry that comes to us loud and clear, that we shall appeal to the only one's power that has any value, and this is man's power, and let us develop our people, in the schools and out, until they have knowledge and skill and health and strong purpose and good will to develop the magnificent resources of the South. And if we do, another 50 years will find this southern part of the United States the wealthiest part of the greatest nation that the world has ever known.

"The Way to Increased Production" is the title of a new booklet just issued by the du Pont Chemical Company giving some facts in regard to their large sale of war surplus material. This company took over the supplies and equipment of the war plants of the du Pont Company and it was found that there were more than 500,000 different items of material and equipment available for sale, covering a large range of materials and machinery in daily use.

The American Kron Scale Company, 430 East 53rd St., New York City, has issued an attractive 62-page booklet descriptive of Kron automatic, springless scales. This booklet is profusely illustrated and shows the various types of these scales, including the dormant platform type for use in the cloth room of a cotton mill and the hanging lap type for weighing cotton laps.

The South's Interest in Education

BY P. P. CLAXTON.†

In a democracy like ours everything waits on education. Material prosperity, the development of natural resources into real wealth, civic righteousness, social purity, political wisdom, and the national strength and safety. And it has forever been true and it has long been recognized certainly in this good state of Virginia that in a democracy, education is the foundation of all. The Virginian whom we still like to call the Father of his Country never ceased to plead with Congress to promote science and culture among the people of the United States. And Thomas Jefferson, whose statue stands there and whose monument ought to be everywhere in the United States pled with the people that they encourage education. He said, "Preach a crusade against ignorance." And then he added that if any of the people expect ignorance to be tolerated and still expect to enjoy their independence, they expect that which never has been and from the very nature of the case never can be. He said the only thing worse would be that a few people, the sons of the rich or otherwise fortunate, might be highly educated and the great masses of the people left in ignorance. He said the ignorance, the weakness, the helplessness, the gullibility of the masses of the people would serve as a temptation to those highly educated and their education would be turned into shrewdness and they would attempt to exploit the masses for their own welfare. And if you don't believe that what he said is true you have only to look across the Rio Grande at a republic that has permitted that condition to exist or to Russia which is trying now to be more or less democratic under such conditions as that.

Another Virginian, Madison, said that for people to remain in ignorance must prove a prelude to a crime or a tragedy or both.

Virginia and the United States are founded upon the beliefs of such men as these.

Education in a democracy has always been the thing upon which all other things wait. But it has come now to be of more importance here and elsewhere in the world, I think, than ever before. Within the last six years 20,000,000 young men and women have given up their live as a direct or an indirect result of war—not the old and decrepit, not those weak in body and mind, but those in the very prime of their lives, just entering upon the period of production, strong in body to be selected to go and do the hard work of war and those whose mental capacity was such that they were thought fitted for such tasks. And more than twice that number have been incapacitated for life, many of them. And in that time we have paid for war—for destruction mainly—more than one-third of the wealth of the world.

"The Special Interest of the South in Education at This Particular Time," was chosen as the subject of my talk with these things in mind. I need not picture to you what the South is, nearly a million square miles, four times as large a territory as the German Empire before it was diminished as a result of war, but in resources many more than four times as much as the German Empire had. I need not picture to you these natural resources, its magnificent climate, its natural soil of all kinds, the state of North Carolina boasting years ago that it filled every blank in the agricultural census report sent out by the government for the report of agricultural products. This parent South projecting down and dying away in the foothills of South Carolina, Georgia and Alabama, and then the great spread of the Piedmont Belt around it, and then that Coastal Plain unexcelled in its fertility; its large quantities of hardwood still in existence; growing its own corn, and cotton, and wheat, and grains of all kinds, with practically a monopoly of cotton, and with its beans, legumes of various kinds, its stock food and pasture lands, lumber, and its semi-tropical and even tropical fruits, with its position as to rainfall and other climate conditions guaranteeing us against having at any time failure of crops, where until the laws of the Universe change the southern states and southern soil will produce year after year their crops and harvest—seeing these conditions exist not only as to these things but mineral wealth as well, coal, marble, zinc, iron, granite, limestone, material for concrete, clays, and other things of the kind; and then again you have your rivers making possible inland navigation—all these things exist. I think it is typified very well by the fact that here in the South as nowhere else in the world do the cotton mills, the steel mills, the furniture factories, the marble works, clay mills, grain mills, canners of vegetables and fruits, the oil mills, stand side by side in the same village, in the same immediate section, all of them getting their raw materials from their immediate environment, as well as their power, and the food to supply and support their operatives, those who do the work. Such combinations cannot be found elsewhere in the United States.

I am reminded of an old negro preaching on coordination, predestination, and election, and he had convinced his audience of the truth of the doctrine of election, but they wanted to know how they might know whether they were of the elected and whether he would preach on that subject and enlighten them. He said Yes, he would, he knew all about it. He said, "Long ago, before you and I were born, before the world was created, an election was held in Heaven. Two votes were cast. The Lord voted for you to be saved. The Devil voted for you to be lost. And it was a tie vote, and the result depends on how you cast your ballot." The Lord, I might say, certainly voted for us to be saved here in the southern states, and I think he added to the weight of the vote when he brought from the European shores and elsewhere this wonderful population.

There are no better people anywhere in these United States, in the world, than the people of the South—something like 33,000,000 of us now, about 23,000,000 of English and Scotch and Welch and French Huguenots and German and others. There have been very few in recent years from Slavic countries and the South European

*Presented before the American Cotton Manufacturers' Association.

†United States Commissioner of Education.

peoples. The dominating stock of the world, from that race whose far-flung battle line is on every soil and in every corner of the globe—the Anglo-Saxons. There are no Bolshevists among us—only two arrests, I think, south of the Ohio and the Potomac, and one of those, I believe, was just across the Ohio. They do not send spies among us here. Even the 10,000,000 colored people, sons of Africa, are as loyal as the rest and resisted the temptations and machinations of the German agents sent among them. On the other hand, there are certain great obstacles for us to overcome along civic and political lines. Two races living here, more different than any other races that have ever lived together anywhere else in the history of the world. If we solve the problem of equal opportunity and equal right living side by side we will be the first to solve it in the history of the world, and it is going to take much wisdom, much knowledge.

Sometime ago I was talking to a Congressman from my state, and he said, "I have learned some things, and among them this, There is nothing that counts finally but man-power, and man-power is not muscle, it is intelligence, it is knowledge of the forces of nature and the skill to make them do your bidding, to produce and to transform our lives into God's."

Education means more to us than to other people in the world, we have so much to gain and so much to lose unless we do prepare ourselves.

And in the meantime we have done less for education than most civilized, progressive peoples of the world. My own native state of Tennessee—no worse on the average than the others—stands below every state north of the Ohio and Potomac, below every northwest state, below England and Ireland and Belgium and France and below all the states of Europe except Spain and Portugal and the Balkan States and Russia. There is a reason for that. For a number of years after the civil war the state in common with other southern states was impoverished and taxation during the reconstruction period was too burdensome. Now the task is up to us to see that every child in the South shall have full and equal opportunity for that kind of education which will enable it to do its work well, to perform its duty to society, and to hold its place and position in the civic and political life of the country, and to reach the highest possible degree of culture, and to gain the largest amount of the sweetness of life that is the heritage of all.

These are things demanded of us. That we shall turn our education around and make the people of the South intelligent about the life they live in order that they may do it well. First, let us say, for agricultural production, that through our schools the boys and girls may gain the knowledge necessary to insure that they may till the soil with the same degree of success as those in the northern states; that they may learn to use modern machinery, cultivate a large number of crops. May I contrast two states? The state of Alabama, one of the richest in natural resources in all the world; one acre in four cultivated in Alabama. In Iowa, 85 out of 100. I saw the farmer in Iowa sometime ago with his traction engine and gang plow and harvesting machinery and the rest. I went through Alabama and I saw a negro plowing a poor mule with a small old-fashioned wooden-handled plow scratching away in his little cotton patch. The people in all this country want the education necessary to overcome such conditions as this. But 50 per cent of the people who grow cotton could not read the bulletins published by the Department of Agriculture at Washington telling them how to grow cotton and market it; unable to read the directions on the modern machinery that would come to them; unable to understand how to protect their cattle against the tick. Why, a few years ago in one of the states of the South where they were only beginning to try to protect the cattle from the tick, I read in the papers that the farmers were dynamiting the dipping vats simply because they were unable to understand the principles upon which the system was based.

We must put into our high schools technical training, the knowledge that will enable a great number of people to become the protectors of industry. We must separate our colleges and technical schools so that we may no longer need to look elsewhere for those who have scientific knowledge and technical schooling to direct the energies of others.

This is the plea that I would make about the one great productive agency of the world: Educate the people to take the raw material, the natural resources, and with scientific knowledge and skill turn them into material wealth.

Just now we are burdened with a very great debt. The interest on our indebtedness now is more than the United States government was spending before the war. We talk about 5 or 6 or 8 or 10 billions of taxes a year to pay current expenses and new expenses and interest on the debt.

We will probably spend more for highways in the next 20 years than we spent for railroads in any like period before. Our industries must be built up at the same time. Can we of the South spend the money to educate our children? Can we support the proper schools for their education along the proper lines?

In the schools we do support, eight teachers out of ten have no preparation for teaching, no technical knowledge, no knowledge of agriculture, no professional training for the work. We are wasting the money, wasting the time of the children, and frittering away the opportunity of the children. We must have schools to train the teachers in. It is going to cost three times as much as we ever spent before.

I am reminded of a story. It carries the philosophy of it with it. It is of a young woman who lisps. She had a sweetheart whose name was DuBose. One day they were driving down through the mountains of the Piedmont section. They drove by a little stream. It was in the time of year when the sun glinted down through the foliage of the trees in russet and gold and it netted itself in her auburn hair. Mr. DuBose looked at the young woman by his side and said, "Miss Sallie, this is the place that is called the 'Lover's Toll-Gate.' Miss Sallie said, "What does that mean?" and he told her that it meant she must pay toll to go through it. She asked. "What is the toll?" and he told her, "It is either a kiss or a squeeze." She replied with her lisp, Oh, Mr. DuBoth (do both)." I have been told by certain friends of mine that if you can do one you can do both. If we would do

(*Continued on page* 566.)

Proper Lighting of Schools

BY A. L. POWELL.*

Artificial lighting should be provided for all schools. Although the majority of schools are not used at night, it is essential that artificial light be available for supplementing daylight on dark days. The method of securing this additional light should be given careful consideration. There are too many instances where the lighting units are apparently located without any thought as to the ultimate result. Clear, bare incandescent lamps are often used and, even if a reflector is supplied, the unit is hung in such a position as to result in eyestrain.

It is extremely important to protect the eyesight of the growing child for injury to this can never be thoroughly repaired. Everyone will agree that proper lighting is an essential aid to clear, comfortable vision.

Before entering into a description of actual installations, it is well to sum up a few of the desirable qualities of illumination and then show, by practical illustrations, accompanied by data, the methods of designing systems which do not violate the essentials of good lighting.

A very large percentage of southern cotton mills maintain their own villages, and in a majority of these the school building is also provided by the mill. Very frequently the school management is also supervised by the mill executive. The proper installation and maintenance of a suitable lighting system in these buildings is of such importance that it seems advisable to treat the matter somewhat in detail. It is for the especial benefit of this class of readers that Mr. Powell's discussion is presented.—Editor.

It is self-evident that the proper amount of light must be supplied for any kind of work. The correct intensity is necessary in order that everything which is to be seen may be seen clearly and without fatigue. No matter what system is used, unless enough light actually reaches the desks, then the lighting system is inadequate. The fault usually lies in too low an intensity rather than too high. We sometimes hear complaints that places are overlighted, but it is usually apparent to one familiar with the principles of lighting that it is not a question of excess amount of light on the work, but rather a lack of diffusion or one of the other features of good lighting. In artificial lighting the values are very much lower than we ordinarily find in daylight but our eyes can adjust themselves to a wide range of intensities.

It is not necessary to go into technical detail when we say that the unit of illumination intensity is the foot candle, (defined as the intensity to which a surface normal to a 1 candle power source, at a distance of 1 foot, is illuminated). In an installation we measure this with a portable photometer. The range of desirable intensities for schoolrooms is given in the table below:

Classroom	3—5	foot-candles	on	desks.
Study Room	4—8	"	"	"	"
Office	4—6	"	"	"	"
Cloak Room	0.8—1	"	"	"	floor.
Corridor	0.8—1	"	"	"	"
Laboratory	3—6	"	"	"	tables.

Of course, it is not necessary to adhere absolutely to these values, but it is undesirable to drop below them. An average of 3 foot-candles illumination will be quite satisfactory for most purposes in the classroom, yet, when fine detail is to be observed, it is often desirable to go considerably higher.

A distinction must be drawn between those classrooms which are used for clerical work, reading, writing, etc., and those used for sewing, art, metal work, drafting, chemical experiments and the like. The latter rooms should be illuminated to the higher values given in the tables. Even though we can supply adequate light for any process, it is inadvisable to allow the young child to do fine needle work under artificial illumination. The periods can be so planned that this could be carried on by daylight.

The harmful effects of glare can not be overemphasized. The likelihood of glare from light sources is becoming greater and greater with the development of higher efficiency lamps with their increased intrinsic brightnesses. Practically, all commercial light sources are far too brilliant to be in the field of view without producing a blinding effect and reducing the ability to see. When bright light sources are placed high above the head the eyebrows protect the eyes, as will be noted out of doors under the noonday sun, but from the construction of our buildings, illuminants must be hung rather low and come within the field of view. We therefore always reduce the brilliancy of the light by means of diffusing globes, shades or reflectors which either enlarge the light source or actually hide it from view.

Diffusion also softens the shadows so that glaring contrasts are less likely. It is not desirable, however, to go to such an extreme diffusion that we entirely eliminate shadows, for they are very essential to show the contour or shape of objects. Over-diffusion or flat illumination is trying to the eyes and unpleasant.

Not only must we take care of the light sources themselves in providing diffusion, but the walls and other objects must be given attention. Dull rather than polished surfaces are desirable here, and even a depolished or waxed finish is more desirable than varnished or highly polished surfaces on the desk and other furniture, as the latter produce mirrorlike effects in reflecting the light sources.

When we think of diffusion, its antithesis, glare, also comes to mind and, as pointed out, intrinsic brightness is one of the greatest sources of glare, but it is not the only cause. A large area of low intensity may be very annoying. Everyone has experienced the glare from a cloudy sky. Excessively bright contrasts may produce glare. This can be illustrated as follows: A lighted incandescent lamp in a dark room is most annoying, whereas the same lamp viewed in an open window against the sky is not at all noticeable. This has a practical bearing in the

*Edison Lamp Works of General Electric Company.

FIG. 1. NIGHT VIEW OF A PRIMARY CLASSROOM WITH DIRECT LIGHTING. SIX 100 WATT MAZDA C LAMPS ARE EMPLOYED IN ETCHED PRISMATIC DEEP BOWL REFLECTORS. THE ROOM IS 24 x 30 FT.

schoolroom where blackboards are adjacent to white walls of a high brightness.

It is natural to direct the light on the object to be seen and not in the eye; therefore, since it is necessary to hang lamps high and out of the line of vision, we equip them with reflectors or other devices to direct the light downward on the working plane. It is always desirable to shield or diffuse the light at angles near the horizontal. In most interiors we space outlets symmetrically throughout the room, but with the schoolroom, as with the machine shop, the shadow effect is very important, so we have the maximum light coming slightly forward and from the left to diminish the head and hand shadows; as far as possible the direction of daylight is imitated, sometimes much improved.

In the distribution of light we have two extremes; one known as local lighting and the other as general illumination. In local lighting we provide relatively low candle power light sources, located rather close to the work, furnishing a high intensity of illumination over a small area.

There is a tendency to use local lighting in drafting rooms, machine shops and sewing rooms. This lamp is often under the control of the pupil. He knows very little about the proper use of lamps and often works in his shadow. Good general lighting would, therefore, be much better. Local lights very often cause annoying glare to pupils at adjacent tables. The system is always unsightly, the drop cords are often tied back, strictly against the rules for good wiring and a dangerous practice.

FIG. 3. TOTALLY INDIRECT ILLUMINATION APPLIED TO A STUDY ROOM. THE EXCELLENT DIFFUSION PROVIDES CONDITIONS FOR COMFORTABLE VISION, ANNOYING REFLECTIONS FROM THE SURFACE OF CALENDERED PAPER ARE ELIMINATED. 200 WATT MAZDA C LAMPS IN INVERTED MIRRORED REFLECTORS ARE SPACED 12 x 12 FT., HUNG 10 FT. ABOVE THE FLOOR.

In general illumination much larger lamps are used, hung as high as possible, providing almost uniform lighting throughout the room; in fact, there is a much less variation in intensity across a room than is possible with natural lighting from windows as ordinarily placed. It simulates daylight, makes the room appear much brighter than local lighting, is, in general, independent of the arrangement of furniture and, without question, is the

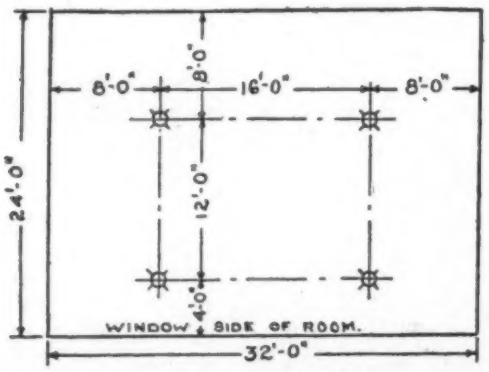
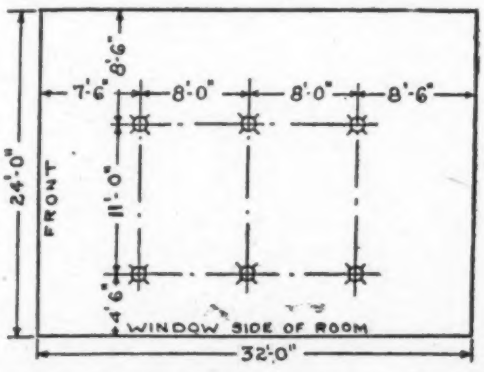


FIG. 4. (a) SEMI-INDIRECT LIGHTING SCHEME FOR TYPICAL SCHOOLROOM—FOUR 200 WATT CLEAR MAZDA C LAMPS IN DENSE GLASS SEMI-INDIRECT UNITS.



(b) DIRECT LIGHTING SCHEME FOR TYPICAL SCHOOLROOM—SIX, 100 WATT BOWL FROSTED MAZDA C LAMPS IN ETCHED PRISMATIC OR DENSE OPAL DEEP BOWL REFLECTORS.

system best suited for schoolroom lighting. The wiring cost is much lower, there is less likelihood of glare and no danger of breakage of lamps or reflectors.

The color of walls and ceilings has a very direct influence on the distribution and actual quantity of light delivered on the desks.

Whatever light source is provided it should be steady. Everyone has experienced annoyance with fluttering or flickering light. This fluctuation interferes with the ability to see and may cause pain by the straining of the muscles of accommodation of the eye.

Whatever light is used should be reliable to insure continuity in service. This is particularly important in the auditorium or other gathering places where, in the event of failure of light sources, panic might ensue.

The most efficient lamp of the type chosen should be employed for reasons of economy, for with it the desirable intensity of light can be obtained at a minimum cost. The maintenance cost should be low, but we must never let the factor of economy over-balance features such as diffusion, as already set forth. The cost of light is such a small item that the best system possible is well warranted, even though it is somewhat less efficient in light utilization than some other means of lighting less suited.

The Mazda lamp meeting in a most complete manner the features outlined above, has come to be practically the standard illuminant for this class of service.

The wiring should be so arranged that the switches are readily accessible. It is often desirable to subdivide the circuits as follows: have one circuit which controls the lamps near the teacher's desk so that he or she can work after hours without all of the room lighted; the main lights arranged on two circuits on a 2-point switch, the first turn of which lights the units away from the windows, the second turn putting all the lights on. Thus part of the room at a time can be illuminated as daylight gradually diminishes; a very economical arrangement.

Obviously, direct lighting with efficient reflectors is the most economical of the three methods, for the effect of wall and ceiling reflection is minimized. Direct lighting, however, may be so arranged to produce glare either from the light sources themselves or by reflections from the objects lighted. Some arrangements of direct lighting may not evenly distribute the light, and as a result, produce dense shadows. It is generally not so decorative as the other methods. Direct lighting should employ translucent glassware; opaque reflectors should not be used in schoolrooms as the ceiling would be in darkness, which is an undesirable condition.

Dense opal and etched prismatic deep bowl reflectors are the most efficient for direct lighting. They transmit but a small proportion of the light and their surface brightness is therefore of a low order. The light density deep bowl reflectors are satisfactory but not so efficient, transmitting more light, and are brighter. The flat type reflector should never be used in the schoolroom, for it is almost impossible to conceal the filament from view when using this style of shade.

FIG. 2. OPALESCENT SEMI-ENCLOSING FIXTURES WITH 100 WATT MAZDA C LAMPS ARE USED IN THE CLASSROOM. THE GLASSWARE IS SUFFICIENTLY DENSE TO THOROUGHLY DIFFUSE THE LIGHT.

More outlets are required for direct lighting than for the indirect systems, in order that multidirectional light may be provided, and smaller size units must be used to keep down the intrinsic brightness of the reflector.

Semi-indirect lighting is not glaring if dense glass be employed in the dishes; it can be made very decorative; the light is usually evenly distributed and such shadows as are produced are very soft and do not cause inconvenience. From these factors one can readily conclude that the eye will work at a better efficiency than under direct lighting. Of course, for the same illumination somewhat more power must be used.

Semi-indirect units, to produce the best effect, should be of rather dense glass. If light density glass is used, unless the bowl is very large, it becomes very bright and the system loses many of its advantages, dropping back to the direct lighting class where a number of fairly bright objects are in the field of vision.

The decorations of the glassware, if any, should be very simple, for any appearance of excessive ornateness would be out of keeping with the character of the schoolroom. Deep crevices in the glass, although they may be decorative, are objectionable from the standpoint of dust accumulation.

Semi-indirect lighting has an advantage over totally indirect in that the place where the light originates is readily discernible. This has a psychological effect on the individual and makes people feel more at ease.

Totally indirect lighting is least likely to produce glare, the light is very evenly distributed and comfortable to work under. The objection has been raised that there is a total absence of shadow, making the room appear flat. With a properly designed system, however, this is not true, but shadows are of course, minimized.

There are two general forms of totally indirect units; one employs mirrored reflectors in decorative housings, and the other porcelain enameled reflectors with different styles of casings. The mirrored glass is more efficient although somewhat higher in first cost.

From the very nature of things this is the least efficient of the three methods, but a number of investigators have proved to their own satisfaction, at least, that the eye operates best, with minimum fatigue, under totally indirect lighting. Of course such tests are conducted under one particular set of conditions, other tests under different circumstances might produce a divergence of results. While laboratory tests are very useful, yet practice in general is a better indication of the real suitability of a system. The great number of very satisfactory semi-indirect systems being installed causes one to believe that for the most conditions proper semi-indirect lighting is best suited.

The fixture in the ordinary classroom serves a purely utilitarian purpose—that of supporting the glassware and lamp; it should therefore be simple in character. The means of suspension of any type of lighting unit should be such that there is absolutely no danger of the glassware falling, and especially in the case of indirect units it is desirable to have some convenient means of cleaning.

It is always desirable to hang units as high as possible to keep them out of the range of vision. This is just as efficient from a light utilization standpoint, for as we hang a lamp higher we choose a reflector which concentrates the light in a narrower angle.

There is a likelihood of glaring reflections from blackboards and they should, therefore, always have matt rather than polished surfaces. It is sometimes possible to get rid of this reflection by tilting the bowls slightly. Blackboards which will be written on with colored chalks, and those that are more than twenty feet away from the pupil should be especially lighted to an intensity approximately 60 per cent higher than the intensity in the rest of the room. This can be accomplished by the use of properly screened and judiciously placed local units. For clear vision, blackboards should not be located between windows.

In Fig. 4 are shown two schemes of lighting which are satisfactory for the average size schoolroom (24 by 32 feet) and the size of lamp specified represents good average practice fulfilling the requirements set forth.

The lighting of lunch, wash, locker and cloak rooms is purely utilitarian. The decorative element does not enter; the desirable intensity of light should be supplied in the most efficient manner. Direct lighting with prismatic or dense opal bowl reflectors, with outlets spaced symmetrically throughout the room, is suitable, allowing from ¼ to ½ watt to each square foot of floor area.

The primary function of corridor illumination is to provide enough intensity for anyone to pass along without danger of stumbling or interfering with another person. This, of course, can be accomplished with low candle power lamps spaced rather widely and equipped with diffusing glassware or reflectors giving a wide spread of the light, as uniform illumination is not necessarily essential. A row of outlets symmetrically spaced along the center line of the ceiling is generally to be preferred and any of the three systems (direct, semi-indirect or totally indirect) will prove satisfactory. Sometimes the building is so laid out as to make ceiling outlets inadvisable. In this case bracket or wall fixtures must be employed. In general, 60 watt lamps on 15 foot centers are adequate. If the corridor is wide, however, the next larger size lamp is better fitted.

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Returning From Quebec

Last month we told in these pages of the annual convention of the Cotton Manufacturers' Association of Georgia that is to be held at the Chateau Frontenac. Quebec, on June 29-30. It may be timely to again point out that individuals desiring to remain at Quebec more than the two days of the convention should so specify when arranging for their transportation.

Arrangements for the return trip may be made at any time, but it has been suggested that on the train between Atlanta and Detroit will be a most opportune occasion as then the various groups may be formed and the personnel of each party determined upon.

Several suggested trips were outlined in May COTTON. One of these, which might be called the Lake Champlain-Lake George trip, was first suggested by Secretary Glenn. While even tentative schedules were unavailable at the

A VIEW OF LAKE GEORGE.

time the accompanying information was prepared, this fact makes little difference as there are so many attractions on all sides that undoubtedly small groups will wish to divert from the main itinerary and visit those points which seem to them to be of greatest interest.

Lake Champlain has been called a lake of magnificient distances, and includes superb mountain views and rare historic associations. It lies midway between the long ranges of the Adirondacks and the Green Mountains. It is about 110 miles in length and from one to thirteen miles in width. Lake Champlain is foremost among the popular summer resorts of the day. Its blue waters are well stocked with pickerel, pike and perch, and the bass fishing is the best known anywhere. Its forest-walled shores and emerald islands abound in game, from the partridge to the fleet-footed deer. Canoeing, yachting, golf, tennis, bathing and driving are enjoyed by the thousands who summer along its shores.

To its incomparably grand and beautiful environment and its unusual facilities for varied entertainment is added the charm of legend and romance that cling to it like the invigorating perfume of its forests. On its shores stand the most impressive and interesting historic ruins on the American continent, old Fort Ticonderoga (now being restored), Fort St. Frederic, Fort Amherst and Fort Montgomery. Held in possession by three nations, this lake was the common theatre of the triumphs and defeats of each.

On its western shore is Hotel Champlain, a modern, fireproof house and one of the finest summer hotels in the world; also AuSable Chasm, a wonderful natural formation surpassed only by Niagara Falls. A large U. S. Military Post is stationed at Plattsburg, N. Y.

Lake George is undoubtedly the most picturesque resort in America. The islands seem to float on its glassy blue surface, and the crystalline purity of the water itself, the soothing atomsphere, the fairy-like nooks, and the gentle slopes of its verdure-clad mountains; all unite to suit the sojourner's mood to his delightful surroundings.

The lake is 32 miles in length; its width varies from ¾ of a mile to 4 miles, and its islands are popularly supposed to correspond in number with the days of the year. The majestic mountains that enclose it are the eastern bastions of the Adirondack system. Lake George is the most frequented of all American waters and it is generally conceded that it surpasses any of the famed Scotch or English lakes in every essential element of lake and mountain beauty.

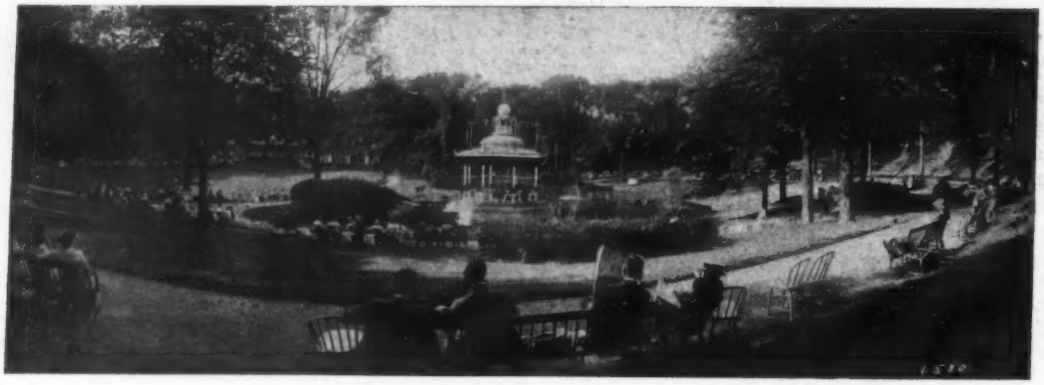
There are literally hundreds of interesting side trips that may be made from points on both of these lakes, the time of the visitor being the only limit. The Adirondacks are close at hand with nearly 1,500 lakes and countless hotels and resorts. However, if the original itinerary is completed, Saratoga Springs, N. Y., will be the next point of interest.

An advantage possessed by this wonderful American Spa over all those of the old world lies in its great variety of waters; for, instead of one kind of water only, there

AUSABLE CHASM.

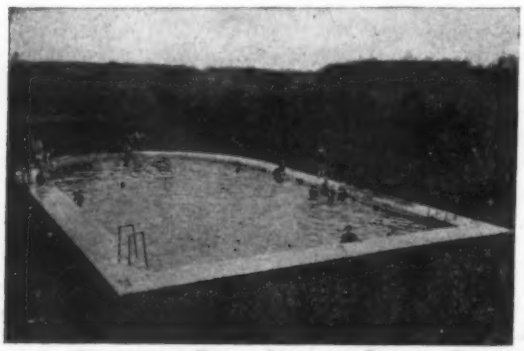
are many, and each possessed of its individual medicinal virtues. About 152 springs, wells and bores were taken over by the original Reservation Commission. Of these about 30 were filled in. 98 were capped off and are now available for use when the water is required, and 24 remain in use for drinking, bottling and bathing purposes. All of the springs now in use have their origin in solid rock, the waters being obtained at depths ranging from 200 to 650 feet.

As a social center, Saratoga Springs needs no introduction to the world at large. It is still the ever attractive, all satisfying summer resort. It is still the gay, glittering, cosmopolitan Saratoga Springs of the past; still the Saratoga Springs of the great hotels and handsome private



CONGRESS PARK, SARATOGA SPRINGS.

residences, of magnificient parks and luxuriantly shaded promenades and boulevards; still the center of wealth and fashion. Each pleasant day Broadway is thronged with fine equipages filled with elegantly attired ladies and their escorts, among whom are to be seen many of the most distinguished men of the time. The four mile lake drive, gay with dashing automobiles and fine horses, presents a very diverting picture from three to six o'clock in the afternoon.



OUTDOOR SWIMMING POOL, LINCOLN BATHS, SARATOGA, SPRINGS.

From Saratoga Springs it is but 39 miles to Albany, the oldest surviving settlement in the thirteen original states. It was founded in 1614 by the Dutch traders who followed the voyage of the discoverer of the Hudson River. It was known successively as Fort Nassau, Beverswyck and Williamstadt, and was protected from incursions of the Indians by a stockade and a moat. According to Van Meteren the "Half Moon" bearing Henry Hudson, on Saturday, September 19, 1609, reached her most northern anchorage on the famous river to which the explorer gave his name. Those by whom this point has been investigated state that if the latitude given (42° 40′) is correct, the sturdy little ship rode at anchor directly opposite the site of the northern end of the city of Albany, while Hudson, loath to believe that he had not in reality discovered the long-dreamed-of route to the Pacific, set forth with small boats in search of deeper water beyond. In 1623 the West Indian Company built Fort Orange (Aurania) on Capitol Hill, and the village became the center of the fur trade in North America. In 1664 it was transferred to the British and the name was changed to Albany in honor of the Duke of York and Albany, afterward James II. It received its charter in 1686 and became the capital of the state in 1797. The first General Congress, at which plans for Colonial federation were discussed, was held

RUNNING THE RAPIDS, AUSABLE CHASM.

in Albany in 1754. "Yankee Doodle" was written in the garden of the historic manor house now known as Fort Cralo, which is still standing on the east bank of the Hudson opposite Albany.

Not only its antiquity but its fine public buildings and other attractions make this city especially interesting to tourists, who will be amply rewarded by visiting the Capitol, one of the largest and most costly buildings in the world; State Education Building, the City Hall, Washington Park, the Cathedrals, the Historical and Art Gallery, etc.

Leaving Albany the party will enjoy the daylight trip down the Hudson to New York, thence to Washington and Atlanta.

Our Merchant Marine*

BY HOMER L. FERGUSON.

I take it, gentlemen, that you are very much interested in taxes, in common with the rest of us, manufacturers particularly. It is a right sore point. During the war we spent as a result of 75 years of neglect of a prime national industry, very close to four billion dollars to obtain a marine which before the war could have been bought for less than a billion and a half, and today we are building ships at $250 a ton that we used to be glad to get $50 a ton for, and our expenditures do not stop there.

Of course we have the ships now and the Government is being pressed to dispose of them to private owners. I take it that like all good business men in the United States you gentlemen do not believe in government ownership of anything which may be owned and operated by private initiative. The Government has this 10,000,000 tons of ships. What should it do with them? How should they be operated. We are all in favor of the Government disposing of these ships, but as good taxpayers and good citizens interested in the ships we do not want them to give them away. We do not want them sold for less than they are worth or for more than they are worth. What is the basis of value of this fleet If any of you gentlemen invested in ships, you would invest on the basis of your principal being secure and that a fair return on your money was a reasonably assured thing. When you buy them now, it is like buying a pig in a poke.

There are only two classes to buy them: either a man who has the shipping business so secure that he feels that he can keep on operating them regardless of conditions, or the other who will buy them as a gamble, who will operate them if he can, and if he cannot, turn them back to the Government. But one of the prime factors in the values of these ships is the conditions under which they will be operated. Is the Government going to give to those vessels any preferential treatment? It is not my purpose to discuss the question of differential duties or preferential treatment except to say that for over a hundred years we did not undertake to build and operate ships except in our coastwise trade. One hundred and fifteen years ago we carried 92 per cent of our products in our own vessels. We did it by the very simple expediment of saying that in the carrying of our own goods to our own customers and in bringing back their goods to us in return we would give our own vessels preferential treatment in that trade as compared with the vessels of the other party who had no primary interest in the business. As a result of the War of 1812, which we won on paper and which we lost in the treaty, we gave up that right. It prevented us from granting to our own vessels any advantage. And from 1828, when we gave up the last shred of preferential treatment of our own vessels, our merchant marine has gone down and down until in 1920 we carry less than 20 per cent, and that 20 per cent is largely controlled by railroads or by interests which were so firmly intrenched that they did not require preferential treatment in order to retain that small percentage of our shipping.

Before the war the wheat men of the North and the cotton man of the South said, "We do not care whose ships carry our goods so they are carried by the ships granting the cheapest rates." We had kept the coastwise ships for our own trade, or we would not have had any ships at all. When it came to sending our soldiers to France we did not have the ships to carry them. One million were sent under foreign flags; ½ million under the American flag, and another ½ million in captured German ships which they were kind enough to leave in our harbors when they entered the war. And we would not have got into the war at all had we had to depend upon our own shipping. When the President went abroad to settle the affairs of the world as best he could, did we have a ship to carry him? He travelled in a ship of German make. The only thing American about that ship was its name—the "George Washington." That ship is German from keel to truck. I understand the German signs are still on the staterooms. Why did he go abroad in the George Washington? We didn't have a suitable ship. Why, gentlemen, did we not have a suitable ship? When the Panama Canal act was passed, and after we had spent $400,000,000 on the Panama Canal, it was provided that no ship might pass through the canal any share of which was controlled by a transcontinental railroad. The Southern Pacific Company wished to build two George Washingtons. They asked no aid of any kind, but they wanted to build and operate these ships through the Canal to San Francisco and on out to the Orient. But they were not allowed to build these ships. We were afraid the railroads would dominate the Canal. We were not afraid of the Canadian Pacific. They can run their ships through the Canal now. We are very fond in this country of getting after our own "Big Business," but we don't pay very much attention to anybody's else "Big Business." It seems the penalty of success is to incur the political displeasure of a good many gentlemen who express their displeasure at the cotton manufacture and other manufacturers.

Everybody in the business knows that before the war the shipping of the world was controlled from London and Berlin, and a few gentlemen in those centers ran the shipping of the world and fixed the rates. We did not mind that.

What is the matter with the shipbuilders? We build ships for people to make money with. We build warships too, and in this country we build and design and complete as good and better warships than any country in the world. But, gentlemen, it requires some practice to build ships. And we cannot build ships unless men think they can operate them successfully. So with this immense fleet we have and its disposition to private owners, the Government has within itself the power to fix the policy under which they shall be operated. If the conditions are going to be what they have been, then in fairness those who may purchase the ships should know it. If the

*Presented before the American Cotton Manufacturers' Association.

conditions are going to be such that a purchaser may feel that he can gamble on the operation of his ships, then they should frankly so state it. It should in decency settle upon its policy before it sells its ships. Otherwise, it may sell its ships at a loss to itself, or it may sell them to a customer who has to gamble on the chance to operate them successfully. Therefore, with three billion dollars of ships to sell, it would seem to be the part of good government, of good sense, to say, "These are the terms under which you can operate, and we will sell you the ships."

That is only one factor. The skilled men to operate the ships are very important. We are somewhat short in them now. We are building them up. The agencies abroad to handle the ships at the other end, to look after the return cargoes; we have practically none of them. They are an absolute essential. The insurance of the vessel and the cargo is one of the prime factors; involves probably more money than any other outlay on account of shipping. Your insurance now is practically all carried abroad. Marine insurance in this country was so scarce before the war that when you built a battleship for your Uncle Sam, you insured it in London and Berlin, you could not insure in the United States. And actually at our place we have had a ship damaged by fire in course of construction and a very excellent friend of mine, an Englishman, had to get permission from the Navy Department to go aboard and inspect it and tell us when we had repaired it and whether we could insure it. Lloyds is a very fine organization, a classification society on which insurance is based, represented throughout the world by citizens of Great Britain, and you build your ship to suit them, and the design is to suit them, and the workmanship is to suit them. Now, perhaps, someone thinks he can operate a business in the United States to suit the nationals of another country. But the United States has generally got along because it has discarded most of the rules in engineering and other lines as practised abroad, and it has built its railroads and its cotton mills in its own way. Why don't we do something of our own? We are engaged in doing it, but it is a long haul. We have gotten up a classification society to class our ships as built, but it will not be done this year, or next year, and it will not be finished in ten years. It requires time.

The control of the sea, the control of the channels of commerce, is just as important to a man shipping his goods out of Norfolk or New York, out of Australia or China or South Africa or Europe, as the control of the rails over which it runs. When you get into ocean transportation, they say the ocean is free, anyone is free to engage in it. It is not so free that you can particularly notice it. Not if the other men have the terminals, the coaling stations, the agencies, the return cargoes already secured, all the paraphernalia of transportation.

It is a long cry from this to the manufacturing of cotton goods, you say? How long? The United States at this time, or as soon as it gets to work again, will have after the replacement of our own depleted markets a surplus of manufacturing capacity estimated at from 25 to 35 per cent. That surplus must be disposed of abroad. A good deal of our goods are going abroad now. That will continue. It is a necessity to us. In the years gone by men came to us with their ships for the raw materials which they had to have. No difficulty about a man coming for cotton or copper or things he has to manufacture. But when you are disposing of manufactured goods, it it a vastly different proposition. Do you think the nationals of any other country would take your products into Europe or South America and market them through their agents, their merchants, their banking connections, in the same way that they would market their own? The goods we have mostly sold abroad have been the things where we were not in very keen competition with the foreign manufacturers.

The economic factor is a big one. The political factor is a much greater one. We had an experience in this country many years ago with our railroads. We found out that the railroads of the country had developed a political strength that was considered a menace in many states. Hence there followed the formation of the Interstate Commerce Commission, which has wrought a great deal of good and a good deal of destruction, too, I presume; but anyway we knew that whoever controlled transportation came pretty close to controlling a good many other things. And whoever controls the transportation of the world controls everything else.

Now how might that condition be changed? The history of our legislation up to the beginning of the war was, so far as my experience goes, covering some 20 years, that not a line or a comma or a word was written into the national statutes that any shipbuilder or owner or operator wanted. It was invariably not done. Unless the Government of the United States settles on a policy which will give to the citizens of this country a preferential treatment of some kind, it will not have a marine and this fleet which it has built will eventually pass under a foreign flag. I am willing to stake my reputation on that, and so is every other man who is experienced in the business. On the other hand, if they will grant that preferential treatment in the beginning, after they get established it is quite possible that they will be able to run without being helped at all.

How did Germany build up its fleet? By giving their own ships the preferences which we all know about so that the ships of other nations could not profitably enter Hamburg and Bremen or other German ports in competition with the German fleet. How did England build up its fleet? I have seen an Englishman stay in New York six weeks to catch an English vessel back to Europe. They give a preferential treatment which, while not on the statute books, is the most powerful kind of preferential treatment and which is more effective than any statute could be. They deal with their own people, because they realize that the nation as a whole is vitally interested. The average American had as soon go in a German or a French ship as an American ship. You watch the Englishman. They know which side their bread is buttered on. They play the game square, it is true. But so far as the sea being perfectly free is concerned, a great many gentlemen who have gone on it have found out differently. You are perfectly free to parallel the R. F. & P. from here to Washington; but I don't notice anyone doing it. The Englishman is ahead of everyone else about 100 years in the salt water business, and their merchants who trade all over the world are entitled to the respect of everybody. Their name is a synonym of up-

(*Continued on page* 609.)

What the Southern Mills Are Doing.

THE WINNSBORO MILLS, WINNSBORO, S. C.

The Fourth Southern Textile Exposition will be held in the Textile Hall at Greenville, S. C., October 18 to 23 inclusive, according to an announcement recently made by President William G. Sirrine and Managing Director John A. McPherson. The officers state that this year's exposition will be the largest and most comprehensive display of cotton mill machinery and textile products ever exhibited in the South. They say:

"The management proposes to feature in the Fourth Show every device or factor that will tend to increase the production and efficiency of textile plants. Realizing that at this period an increased output is the predominating factor in industry, we wish to focus the attention of mill men on everything that will achieve this end."

The Consolidated Textile Corporation has established its southern office at 108 North Elm Street, Greensboro, N. C. This location is, however, only temporary. As soon as the American Exchange National Bank Building is completed offices will be established on the first office floor of this building. Allen F. Johnson, vice-president and director in charge of the operation of the string of mills controlled by this organization, F. L. Branson, general superintendent of the properties and George W. Duncan, assistant to the vice-president, are already in Greensboro.

Two new cotton yarn mills, one of 20,000 spindle capacity and the other 25,000, are reported in the process of organization by J. L. Gray and J. H. Separk of Gastonia, N. C. It is understood that the 20,000 spindle project will be named the Flint Manufacturing Co. No. 2, and capitalized at $1,000,000, while the other company, the Arkray Mills, will have a capital of $1,500,000. Both will manufacture fine combed yarns.

The Hopahka Cotton Mills, at Moorhead, Miss., have been acquired by the Magnolia (Miss.) Cotton Mills Corporation. Work has already been started on beautifying the village and putting the mill in first class condition. The mill is being painted both inside and outside and automatic looms are being installed.

The Flint Manufacturing Co., Gastonia, N. C., has retained E. S. Draper, landscape architect and city planner, Charlotte, N. C., to make surveys and plans and lay out the mill village for their new Mill No. 2.

The Aileen Mills have been organized at Biscoe, N. C., with a capital stock of $500,000. John C. Rankin is president and David Clark secretary. This company has purchased the Francis Cotton Mills, a 7,680 spindle plant.

Application has been made for a charter for the McClan Cotton Mills Company, Red Springs, N. C., to build a plant for the manufacture of combed yarns. The capital stock is $500,000 and the incorporators include A. E. McEachern, A. P. Snell and J. A. Love.

The semi-annual grand rally of the Cumberland (N. C.) Civic League held at that place recently was a big success. The day was celebrated with basket ball, baseball and other sports, an address and a free moving picture show. Clifton Corley, president of the Corley Mills, Inc., and Mrs. Corley were present at the festivities.

It is reported that W. S. Erwin and associates are planning to organize a $500,000 company to build a cotton mill at Clarksville, Ga.

The Victor-Monaghan Mills, of Greenville, S. C., have material on the ground for the building of a 15 x 140 foot, two-story addition to their Ottaray plant in Union, S. C. The new floor space will be used to house 2,560 spindles and one spooler which will make the additional yarn required by the plant's dobby looms. All equipment has been purchased. It is reported that these mills will also install complete laundry equipment at their mill villages at Jonesville, S. C., and Seneca, S. C.

The name of the Tipton Cotton Mills, Covington, Tenn., has been changed to O'Cedar Mills Co.

The stockholders of the Eno Cotton Mills, Hillsboro, N. C., have authorized the increase of the company's capital stock to $2,000,000. It is understood that extensive improvements are contemplated.

The Dorothy Mill, Dallas, N. C., is to increase its number of spindles from 7,000 to 11,000 and change from carded to combed yarns. An addition, 150 x 150 feet, is being erected.

Two new boarding houses are being erected in the mill village of the Loray Mills, Gastonia, N. C.

The Helen Yarn Mills, Rock Hill, S. C., will erect a one-story, 205 x 50 foot, mill construction building and install therein 2,500 spindles.

The Pyramid Mills have been incorporated at Cartersville, Ga., with a capital stock of $60,000 by B. H. McGinnis, Joseph S. Calhoun and P. C. Flemister.

The Cedartown (Ga.) Cotton & Export Company will build a laundry for the use of their operatives, having awarded $30,000 in contracts for building and machinery.

The Lauderdale Cotton Mills, Meridian, Miss., will expend $150,000 in improving their plant. They have purchased 285 additional looms and will improve the homes in their mill village.

The Daniel Morgan Mills Company has been organized at Gaffney, S. C., with a capital of $78,000 by J. M. Ar-

cher, C. W. Allison and Thomas B. Butler. Towels will be manufactured.

An 8,000 spindle duck mill, 132 x 265 feet, will be built by the Brandon Mills, Greenville, S. C. This will be a two-story structure, of combination reinforced concrete and standard mill construction. A 100 x 100 foot warehouse will also be erected.

The Nancy Cotton Mills, Salisbury, N. C., have been incorporated with a capital of $500,000 by J. C. Lawson, Chas. McCanless and W. T. Bundy.

The Love Cotton Mills have been incorporated at Lincolnton, N. C., with a capital of $500,000 by Robert A., Edgar and J. Frank Love.

At a recent meeting of the board of directors of the Orr Cotton Mills, Anderson, S. C., it was voted to increase the capital stock of the company from $800,000 to $1,600,000.

The Raeford (N. C.) Cotton Mills, Inc., have been chartered with an authorized capital stock of $420,000. The promoters include Claude Gore, M. W. McRae and D. K. McColl, of Rockingham, N. C.

It is reported that the Mays Mill, Inc., has filed an amendment increasing its capital stock from $1,000,000 to $2,000,000.

Construction work on the new Musgrove Mill property at Gaffney, S. C., has begun and will be pushed to completion as rapidly as possible. The work on the Cash Mills at Gaffney is also progressing satisfactorily.

According to a report, nine Gaston County (N. C.) cotton manufacturing enterprises have increased their capital stock $2,875,000 by recent amendments to their charters. Following are the mills involved: National Yarn Mills, Belmont, $250,000 to $500,000; Majestic Manufacturing Co., Belmont, $250,000 to $500,000; Imperial Yarn Mills, Belmont, $250,000 to $850,000; Chronicle Mills, Belmont, $500,000 to $850,000; Monarch Cotton Mills, Gastonia, $125,000 to $500,000; Armstrong Cotton Mills, Gastonia, $200,000 to $300,000; Clara Manufacturing Co., Gastonia, $400,000 to $800,000; Seminole Manufacturing Co., Gastonia, $200,000 to $600,000; Dunn Manufacturing Co., Gastonia, $50,000 to $200,000.

The Thomaston (Ga.) Cotton Mills are building 264 four, five and six room cottages for operatives.

The Bibb Manufacturing Co. of Macon, Ga., has secured bids for the construction of a 30,000 spindle mill and 200 six room operatives' cottages to be erected at Porterdale, Ga.

The Dunson Mills, at LaGrange, Ga., are adding some ten or a dozen new cottages to their mill village.

The Dixie Cotton Mills, at LaGrange, Ga., have a number of new cottages for their operatives under construction.

The Fairfax (Ala) Mill are adding a $30,000 extension to their community house to accommodate a gymnasium and other features.

The firm of L. H. A. Schwartz & Company, Boston, has been dissolved. Ludwig H. A. Schwartz, the senior partner, has retired from active business. Robert M. Macintosh will continue to carry on the cotton machinery business heretofore conducted by the firm, under his own name with the same offices at 40 Central Street, Boston.

The New England Mill Situation.

An advance of 15 per cent in the cotton mill wage schedules will go into effect on June 1, following a voluntary advance given by Fall River manufacturers and accepted by the unions of that city. The American Federation of Labor through the United Textile Workers had asked for an increase of 17½ per cent and the Amalgamated unions, affiliated with an I. W. W. organization, had asked 50 per cent and a 44 hour week. After the prompt acceptance by the Fall River unions the other organizations threatened many things but will finally fall in line. If they do not, many operatives will join manufacturers in fighting the other unions.

This additional wage advance means at Fall River the payment of a price of 58.19 cents per cut for weaving 45 yards of 28 inch 64 x 64s. In the early part of 1915 the wage scale was based upon 21.63 cents per cut, so that the total advance since then, in five years, has been 36.46 cents per cut. At the time the advance was granted the added costs would figure about 1 cent a yard on wide print cloths, but the price has dropped in the cloth markets a little over 12½ per cent since then.

A strike of doffers in Fall River mills has finally petered out. A strike among loomfixers at New Bedford begun about a month ago finally brought all other operatives out of the mills. Manufacturers are fighting the strike and are not over-anxious to run the mills in view of the unsettled conditions in the markets. An advance of 15 per cent in the wages of the striking operatives was posted in the mills in the third week of May and that seemed to give promise of a final breaking of the strike.

As a rule the operatives have shown much less desire to strike "at the drop of a hat" and some manufacturers believe that the worst of the troubles with workers is now over.

The mills in this section have continued to issue extra dividends and in some instances stock dividends. The earnings have been very large and the Fall River distribution among stockholders for the last quarter was the greatest ever known in the history of the business. Under such conditions it was thought useless to resist wage demands and it was deemed prudent to offset any encroachments of radicals among the workers by voluntarily granting an advance. When this was decided upon it was felt among mill men that the peak of high prices had passed and that it was very probable that the advance would have to come out of the profits of the mills for a time, rather than out of the consumers of cloths.

Although the mills have many orders on their books, some of which will run to the end of the year, there has been more conservatism among manufacturers than has been seen for a long time. This is due primarily to the continued bank pressure and the scarcity and high rates asked for money. While the mills have large resources, the largest ever known in the history of textile manufacturing, it has been the common belief that a recession was inevitable and might be precipitated suddenly unless precautions were taken promptly. One of the serious difficulties has been the inability to ship regularly, largely on account of strikes at the ports, on the railroads, and in and around New York. Shipments are very much disorganized and deliveries long delayed.

RAINBOW FRICTION SURFACE BELTING

After the cotton is picked

—the gin, the linter, the huller, *all* the cotton mill equipment needs power—strong, dependable power.

Realizing the transmission conditions existing in this industry and the part that belting must play in delivering the power, the United States Rubber Company recommends Rainbow Friction Service Belting.

The strength and pulley gripping power of Rainbow make it the right belting for main drives. The flexibility of Rainbow makes it suitable for use on cross drives and where idlers are encountered.

Rainbow Belting, properly installed, means greater power economy. To secure the highest transmission efficiency in your mill, one of our representatives will be glad to exchange belting information with you with the idea of securing for you the most service per dollar invested in your rubber requirements.

United States Rubber Company

The World's Largest and Most Experienced Manufacturer of Mechanical Rubber Goods

The finishers have not been accumulating cloths in the gray and in a number of instances they have been compelled to rely upon highway trucking to keep the plants moving. At times some of the large printers have been troubled by the difficulty of getting in coal. Embargoes have been placed and removed most irregularly and it has been impossible to count with exactness upon any delivery being made on time. While this has made many troubles for the mills, it has led to the necessity for granting time extensions to buyers for payments.

The markets have become weak after long pressure. This has not been due to any accummulation of goods in either first or second hands. Stocks are clean in many jobbing houses and they are very light in mill centers. But goods are in warehouses awaiting shipment, although paid for, millions of dollars worth are tied up en route, and great inconvenience is being caused in the trade by the long delays in delivering seasonable merchandise. What the outcome will be is a matter of grave doubt at this time, and it has been complicated by the publicity given to the drive of retailers for lower prices.

Manufacturers in this section are prone to believe that the retail end of the business was weaker than any other end largely due to the fact that retailers have had a poor spring season and have constantly carried stocks of unusual proportions measured by costs as they now stand. The mill bankers are of the opinion that the move on the part of retailers will enable them to liquidate without losses which they would have to take at the season's end if they had not moved while there are still several weeks of good retail selling times ahead.

It is quite natural that buyers should place all the blame they can upon manufacturers for the predicament in which many retailers found themselves in at the latter end of the spring season. Close examinations made of the prices current in retail channels show that the manufacturers have been very modest profiteers in comparison with some of the retailers who are now advertising reductions. A converter who sold a well known printed voile to one of the large New York retailers at 42½ cents a yard, found the goods priced at the counters at $1.25 a yard in the first week in May. A reduction of 20 per cent from this exalted price still left a handsome profit. A cotton and silk fabric made in New Bedford and sold to a New York retailer at 65 cents a yard, was priced for sale at $1.50 a yard, leaving plenty of profit after a much advertised reduction of 20 per cent had been made.

The gray goods markets have dropped in price from a level of 26 cents for 38½ inch 64 x 60s to 22½ cents. Many fine goods have been sold in second hands at still greater declines. A voile that sold at 42½ cents was sold as low as 25 cents and has since recovered to 27 cents. Sateens used in the clothing trade dropped from a level of 44 cents a yard to 31 cents. These were extreme instances. In the fine combed yarn markets, 2-80s dropped from an asking price of $5.20 a pound to a selling price of $4.35 a pound and some other very high priced numbers fell off under the impulse of continued light demand.

There has been little or no such falling off in finished goods as yet. Some of the unbranded bleached cottons have dropped in keeping with the declines in gray cloths from which they are converted and without stimulating new business. Ginghams have held their values steadily and percales have remained unchanged. Some shirtings have been offered for resale at lower prices largely because it was found that retail prices were being cut on shirts and manufacturers could not secure spring advance orders. In the garment trades the declines in price have been very marked and this has been due largely to the extravagant levels of costs forced upon garment manufacturers by the radical workers. This upset in trade is beginning to have an effect upon the fabric markets but thus far the clothing trades have not cancelled cotton goods.

Another gravely unsettling feature of the month was the wide open break in the silk industry. Large quantities of silks have been used in cotton manufacturing, in shirtings, cotton and silk dress fabrics, and in hosiery. Orders on the books have been imperiled and new business has been very small. This has also had an effect upon fine cottons as they are now relatively high priced compared with many of the lighter weight all-silk goods. The strike at New Bedford has removed any likelihood of any accumulation at first hands.

A month ago it was feared that there would be a great deal of idleness among workers this summer due to the desire for vacations. In some sections it is now stated that operatives are willing and would prefer to have a vacation of two weeks sometime at the end of the summer. This plan has been tried and has worked well in some of the northern New England mills in past years. Some manufacturers say that operatives are beginning to realize that the current prosperity cannot be long continued and they are disposed to talk less of stopping work for any long periods during the summer. The shutting down of machinery in some of the New England silk and woolen mills is tending to make cotton mill workers less arbitrary in their demands.

The finishers and bleachers have abandoned their practice of making price exchanges through an open price association. The legal decision in the Hardwood Lumber open price association has brought up the question of the legality of the open price plans among manufacturers of cotton goods and they are disposed to discontinue their plans lest government investigations may be provoked pending a decision by the full Supreme Court on the merits of the plan as a whole.

The financial collapse in Japan has lessened the urgency of demands for cotton machinery from this country. Many orders have been placed here and will stand but the desire of Japanese to buy established plants to secure the machinery in them has passed off. Machinery manufacturers are beginning to secure more tractable workers although they are still unable to operate their plants in full. There is plenty of business on the books, some concerns being unable to promise new deliveries before the fall of 1921.

The high prices asked for cotton yarns are cramping the knit goods mills in a serious way. The knit goods selling agents have been unable to induce jobbers to pay higher prices and orders have been steadily dwindling.

Barrett Specification type of Roof on Warehouse Pier No. 2 of the Norfolk & Western Railroad at Lambert's Point, Va

No maintenance expense for 23 years—

IN 1892 the Norfolk & Western Railroad erected at Lambert's Point, Va., the warehouse piers shown here. A Barrett Specification type of roof was used to cover these buildings.

This was in the days before The Barrett Company issued Surety Bonds on Barrett Specification Roofs, and before some of the present-day improved roofing methods had been worked out.

Notwithstanding this, *there was no maintenance expense of any kind on these roofs until 1915.* In other words, the owners were absolutely free from roof trouble and roof expense for 23 years.

When the time came to roof their new warehouse piers, there was no question in the minds of the officials of the Norfolk & Western Railroad as to what roof they would use. They ordered the new buildings covered with Barrett Specification Roofs as a matter of course.

These roofs, shown in the illustrations below, cover an area of more than 400,000 square feet.

On them we have issued our 20-Year Surety Bond, and while the railroad officials were pleased to get the Surety Bond, they knew from experience that it was not necessary, for the roofs would outlive the guarantee.

The Surety Bond

The Surety Bond is offered on all Barrett Specification Roofs of fifty squares or more in all cities of 25,000 or over, *and in smaller places where our Inspection Service is available.* It is issued by the U. S. Fidelity & Guaranty Company of Baltimore, and exempts the owner from all maintenance expense for the life of the Bond.

Our only stipulations are that the Barrett Specification, *revised April 15, 1920,* shall be strictly followed and that the roofing contractor shall be approved by us and his work subject to our inspection.

These roofs take the base rate of insurance, and cost less per year of service than any other type of "permanent" roof.

Important Notice

The Barrett Specification 20-Year Bonded Roof represents the most permanent roof-covering it is possible to construct, and while we bond it for twenty years only, we can point to many roofs of this type that have been in service over forty years and are still in good condition.

For those who wish a somewhat lighter and lower priced roof covering, we recommend the Barrett Specification Type "A" bonded for ten years.

Both roofs are built of the same high grade waterproofing materials, the only difference being the quantity used.

Full details regarding these Bonded Roofs and copies of The Barrett Specification sent free on request.

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New York	Chicago	Philadelphia	Boston
St. Louis	Cleveland	Cincinnati	Pittsburgh
Detroit	New Orleans	Birmingham	Kansas City
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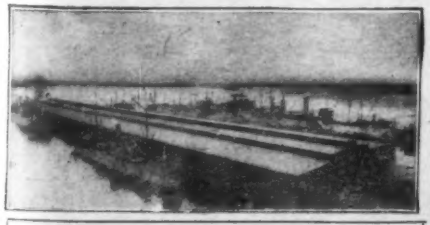
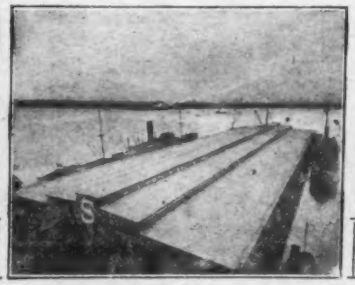


Barrett Specification Roofs on Piers of the Norfolk and Western Railroad at Lambert's Point, Va. The total area of these roofs is more than 400,000 square feet.



Roofing Contractors: Odend' Hal Monks Corporation, Norfolk, Va. Gen'l. Contractors: John P. Pettyjohn Co. Lynchburg, Va. Architects: Engineering Dept. Norfolk and Western R. R., Roanoke, Va.

Cotton Comments.

BY H. AND B. BEER.

Notwithstanding all efforts made to bring about a reduction in commodity prices in order to lower the cost of living, cotton and foodstuffs remain strong, in some instances at the highest levels reached, owing to unfavorable weather and the scarcity of labor keeping down the acreage and resulting in unfavorable crop condition reports.

Efforts are still being made to remove the inflation of money by the curtailing of credits except for essentials, and the government's drive against profiteering is reflected in a lowering of prices for wearing apparel.

Meanwhile wages continue advancing in many lines of trade, and prospects are that 2,000,000 railroad men will share in higher pay in the near future, as will thousands of Postal service men, and as the masses are well employed at high wages, indications are that the purchasing power of the public will be greater in the future.

Consumption of cotton continues to increase the world over, especially in the United States, returns for the month of April showing American mills to have used 598,000 bales including 30,000 linters vs. 488,000 in April of last year including 12,000 linters. For the first nine months of the season, mills of the United States consumed 5,035,000 bales including 232,000 bales of linters, as against 4,700,000 last year including 407,000 bales of linters.

Compared with one year ago mill stocks in America at the close of April were 1,809,000 vs. 1,379,000, but stocks in public storage on the same date were only 2,968,000 against 3,976,000 last year. Active spindles were 34,347,000 vs. 33,208,000.

Increasing consumption, decreasing stocks and less favorable prospects for the new crop are the sustaining features of the market.

As was the case last month, crop accounts continue unsatisfactory, in fact are worse than one month ago, due to too much rain in nearly all sections of the belt, particularly in North Texas, Oklahoma and the Mississippi valley states, while intermitting rains prevented favorable progress in the South Atlantic section. In addition low temperatures made germination poor, resulting in bad stands in many localities, all of which necessitated much replanting, some of which has yet to be done.

It is likely that the government's first monthly cotton crop condition report, due June 2nd., which reports on average condition of the plant, as of May 25th., will make a very poor showing, perhaps less favorable than for the corresponding time last year. Returns will compare with 75.6 last year, 82.3 year before last and the previous lowest on record for May 25th, of 69.5.

As to the acreage, private returns indicate little or no increase over last year for the belt as a whole, and it is possible, if the weather remains unfavorable, for a decrease to be reported. However, the government will not make a report on this year's acreage until early in July.

It is unfortunate that climatic conditions have been unfavorable in the South for the making of large crops this year, which the South hoped for and the world expected. A crop of 13,000,000 bales this season vs. 12,000,000 last year would be considered small, and a yield of 14,000,000 would be moderate in keeping with trade requirements for next season. At the moment prospects are against the making of a moderate, much less a large crop.

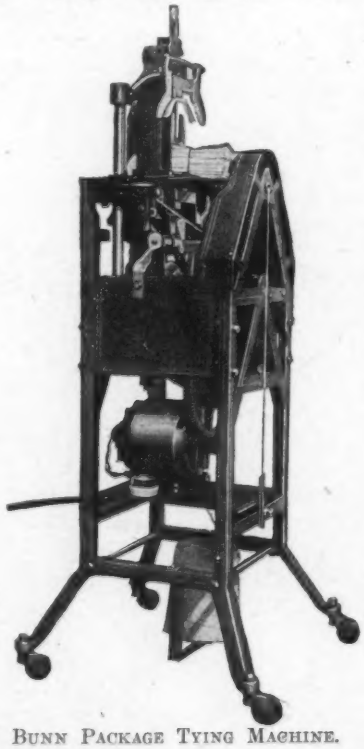
As the trade is interested in the amount of cotton remaining in the interior to be marketed, we herewith give comparisons which will be found interesting.

	This Season	Last Season
Interior stocks August 1st.	2,909,000	1,556,000
Total crop, estimated	12,000,000	12,835,000
	14,909,000	14,391,000
Remaining to May 14th.	3,678,000	4,269,000
Remaining to be marketed	3,678,000	4,269,000

In addition to there being nearly 600,000 bales less to market in the interior than there was at this time last year, it is the general opinion that there is less of good cotton and more of low grades in the South than there was at this time one year ago.

A Package Tying Machine.

A machine that will take the place of hand labor in tying cartons, boxes, bundles of hosiery or other uniform packages, tying them with accuracy at a high speed and wrapping the string around tightly can save much time,



BUNN PACKAGE TYING MACHINE.

labor and tying materials. Such a machine, manufactured by B. H. Bunn & Co., 9970 Charles St., Chicago, is shown in the accompanying illustration.

Increased economy and efficiency can be obtained through the use of this type of machine. There is no waste of string, only just enough being used to accomplish the purpose. In contrast with hand tying, where one package is tightly, the next loosely tied, this machine ties each package the same way, wrapping the string tightly every time; a patent knotting mechanism is used, in-

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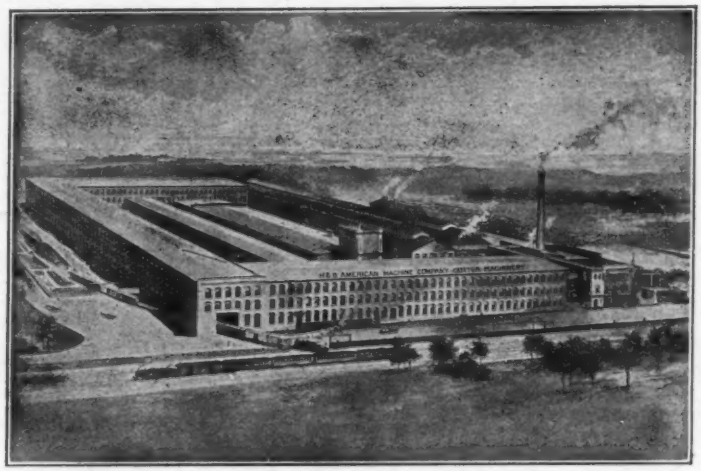
Atlanta, Ga.

COTTON MACHINERY

Opening and Picking Machinery

Card Room Machinery



Spinning Room Machinery

Twisters for Wet or Dry Work

With Band or Tape Drive

H & B AMERICAN MACHINE COMPANY
PAWTUCKET, R. I.

suring a non-slip knot. Once secured this special long loop knot always holds, it is claimed. The speed is limited only by the ability of the operator to handle the material being tied. The machine is geared for one complete operation in two seconds of time. It is said that one girl using this machine can do the work of three to five girls using the hand tying method.

This package tying maheine first found use as an aid to the speedy handling of letter mail in postoffices. It was also used extensively in large mercantile and advertising houses in the preparing of matter for mailing. The introduction of the package tying machine into the post offices has proven a great time and labor saver.

The machine is made in several sizes and in different models. The size of the packages to be tied determines the size of machine to be used and the nature or character of the packages determines the model. In order that they might furnish the correct machine for any specific case, the manufacturers should have samples of the materials to be tied so they can select the type best adopted to the particular package or bundle.

The Veeder Manufacturing Co., Hartford, Conn., had an exhibit of Veeder counters at the meeting of the American Cotton Manufacturers' Association showing the workings of automatic counters which record the production of looms, spinning frames, roving, drawing, ring frames, mules, braiders, finishing and inspection machinery. Special attention was being called to the loom pick counter manufactured by this company. W. C. Waldo was in charge of the exhibit.

A New Mechanical Overload Release.

An effective "safety-first" mechanical device that will instantly disengage a drive when the load exceeds a predetermined point, has been developed by the Link-Belt Company. It is known as the "Lettgo" mechanical overload release. It is especially adaptable for elevating, conveying, and power transmission machinery.

The "Lettgo" will automatically disengage the driving from the driven machinery if the load exceeds the fixed amount, thus allowing the driving motor or other source of power to run free and prevent damage, due to the inertia of the motor armature or other high-speed moving parts.

The construction of this device is such that it will release whether the load is gradually or suddenly applied, but it can be set so that it will not trip from jars or shocks.

The "Lettgo" is symmetrical, and can be assembled to operate in either direction. It can be adjusted for tension, so that it will operate for any desired overload. The mechanism is entirely inclosed and can be packed with grease for lubrication purposes.

Being positive in its action and easily reset, the Link-Belt "Lettgo" has distinct advantages over the "break pin" or similar devices.

The latest additions to the Atlantic Dyestuff Company's range of colors comprise Atlantic Yellow G, a clear sulphur yellow, and Bismarck Brown AY, a very clear, yellow shade of Bismarck Brown.

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OE-502

Insurance Ethics and Economics*

BY FRED. S. SMITH.

It is evident that in all industrial activities one individual must help another. Out of the simple attempts at cooperation in the past has grown our present complex industrial life. If men were living in a state of brotherly love property would be so distributed that losses by fire, marine perils, accidents and the like would be automatically absorbed and not result in serious individual hardships. Unfortunately, we do not live in Utopia, and, as industrial combination for mutual benefit became necessary, the present plan of pooling commercial losses came naturally about.

Insurance is the device for transferring such losses from the one to the many. Purely mutual in principle, and highly ethical in idea, it has grown to be one of the great businesses of the world, and is indispensable to our financial stability and success.

While the principle of insurance is entirely ethical in its commercial aspect, it is oft-times subject to selfish as well as unskilled management. By reason of its highly complicated technique, the great body of purchasers are seldom able to clearly understand its intricacies, or intelligently check up its cost; and because of the comparative infrequency of claim preferment tests, insurance contracts when carefully examined often fail to measure up to a just or ideal standard. They do not fairly cover all features of the situation. As a chain is no stronger than its weakest link, so an insurance contract adjustment may be determined by its least favorable clause. The best contract that can be drawn is none too good. As our fire fighting apparatus is frequently tested by trained engineers so our insurance should be tested from time to time, and by experts where possible, so as to determine whether or not it will function properly when the demand is made.

My own observation, which covers over twenty-seven years, is that insurance companies at large are doing a square business. Their operations are generally ethical and defensible. Nevertheless, the insured should understand his contracts, as he often does not, and place his insurance with great care, thus protecting himself from any possible injustice or fraud.

All insurance is mutual in principle, whether administered by so-called mutual or stock insurance companies. For example, take your mill fire insurance. Today there is little difference in service, or net cost, between the two great groups of insurance companies writing your policies. The administration cost of both the mutual and the stock companies is approximately 50% of the net premiums. While this is high, one should not forget the service rendered by the insurance companies in preventing fires and reducing both losses and premium costs.

Assuming that the service and net costs of the Factory Mutual Companies and the competing companies are equal, we may analyze their expense—the 50% to 55% of net premiums not returned in claims—in the way of pure company administration, and fire prevention service.

The mutual companies operate much of their service through a bureau, and the stock companies directly competing with them have adopted a similar bureau service. The mutuals, being divided into many comparatively small units, must necessarily have a high expense ratio, so the stock companies are able to gain profit through rates which are about equal to the net mutual cost under normal dividends. Both are impelled to exercise great care in order to keep their losses at a minimum, and as a whole, we believe that the fire prevention services of insurance companies are fully worth the entire insurance charge.

Theoretically, the mutual net cost should be less than the stock cost, and to my mind, the fault may be laid at the door of the mutual companies in their non-insistence on all insureds carrying insurance of at least 90% of value, thereby allowing unscrupulous policy holders to take advantage in possessing far more insurance than they pay for.

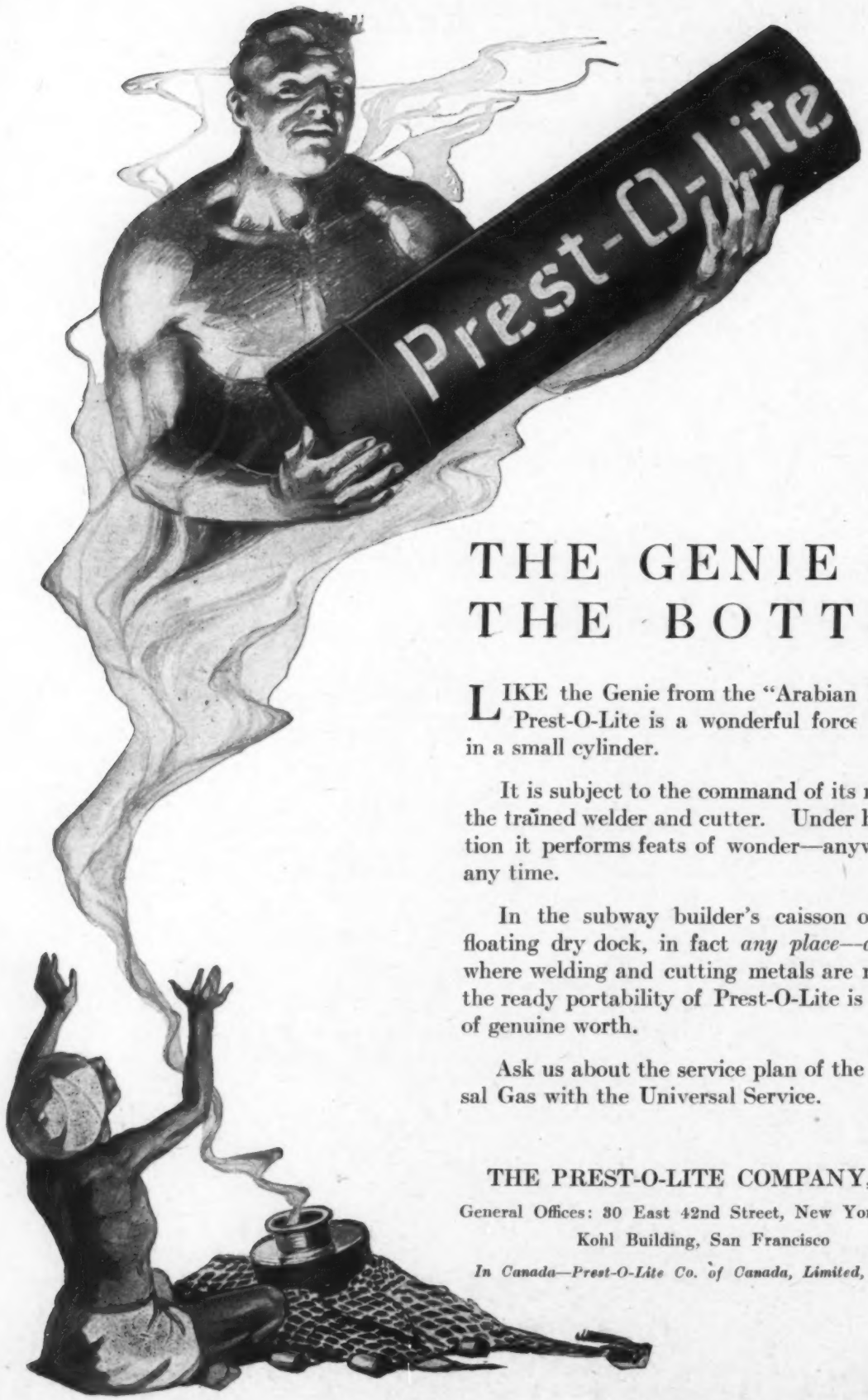
To illustrate: I once inspected a large plant covering several city blocks, with many fireproof screen buildings, which, together with wide streets, divided the property into four distinct fire risks. No conceivable fire would burn more than 25% of the entire property at one time. The mutual companies only required that $3,000,000 of insurance be carried, and collected $18,000 deposit premium at their minimum rate of 60c. The insured admitted a value of 12,000,000 and as the insurance was blanketed, virtually had $12,000,000 of insurance, for his policies, by reason of the absence of co-insurance, fully covered any one of four possible $3,000,000 losses. Note the important thing for your consideration! This insured only deposited $18,000 premium, where he should have deposited $72,000 and you, who may pay for 100% insurance, either because you have but a single fire risk and may lose all in one fire, or because you have a conscience and want to play square, are contributing by reduced dividends for three quarters of his insurance.

I recently stated that $8,500,000 insurance was far too little to carry on a 240,000 spindle mill, as so appraised by the insurance companies. Such a mill at the very conservative figure of $70 a spindle new, with $1,200,000 of process, would cost laid down today fully $18,000,000. An appraisal of $8,500,000 argued but one thing—an average depreciation, throwing stock out of the calculation, of 56½%. This was a well kept up property, producing a recognized brand of goods of high quality, and the treasurer agreed, as you must agree, that you cannot make fine cotton goods in any mill 56½ physically depreciated. Insurance of $12,000,000 was insisted upon and subsequently an accurate appraisal substantiated my contention that 33% is about a maximum depreciation on a going plant.

This shows how even the insurance companies may err in not obtaining a proper premium. Fire losses are proportionate to the total property insured. The administration costs are likewise constant. So, if we increase the premium income by more careful underwriting, every dollar of the increase may be declared in dividends.

Compensation insurance costs two to three times as much as the net cost for fire insurance. By means of the complicated method of individual rating, the costs in tex-

*Delivered before the National Association of Cotton Manufacturers.



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PW-508

tile mills vary from charges of over 70% to credits of 50% on manual rate, or nearly three and one-half times. Rates for each industry are first made on a pure premium, which is determined upon the combined experience of all similar industries in the country, and is supposed to reflect the actual compensation cost per hundred dollars of payroll, under the original Massachusetts Compensation Act. The pure premium is loaded with a factor for insurance company expenses, and with a further differential to adjust up to date the difference in cost of the various Compensation Acts of the several states. For instance, in Massachusetts, the pure premium for cotton spinning and weaving of 47c is now multiplied by 1.95, resulting in a present manual rate of 92c.

This manual rate is subject to further adjustment for each individual insured, first, credits or charges for the physical condition of the plants, including machinery guarding, stair and elevator conditions, fire-escapes, etc., and second, by heavy charges or credits, dependent upon the experience for three years and nine months previous to each time of rating. It is because of this experience rating, in effect since January, 1919, that individual rates vary as much as three and one-half times. To my mind, this experience rating is quite defensible. It is the legitimate answer of the insurance companies to the decided demand for the privilege of self-insurance, which it meets more than half way.

Manufacturers do not realize that it is now very much up to them to keep their losses down, and for the reason that the present rating method costs each policy holder from $1.25 to $1.75 in premium charges, or lack of premium credits, for each dollar expended by the insurance companies in compensation costs, to wit: payments to injured employees, expenses and allowances for doctors, nurses, oftentimes hospital equipment and other charges appertaining to the situation. Let me repeat: every $100 the insurance company pays costs you from $125 to $175 spread over succeeding years.

If the compensation insurance companies were to spend 20% of your premiums in preventive work, they would reduce the accidents to such extent as to warrant your paying the extra amount in base rate, in view of the heavy percentage of credits which would thereby result. Aside from the humanitarian standpoint of saving life and limb, you can, therefore, probably expend an amount equal to from 10% to 20% of your compensation premium and save thereby. You might remember that the indirect loss of time and labor turnover is greater than the compensation cost. Compensation insurance is quite new and the companies, both stock and mutual, are now in about the same position that the fire insurance companies were before the advent of the Factory Mutuals and their protective methods. It therefore behooves all manufacturers to give careful attention to the prevention of accidents.

The insurance companies allow from 5% to 15% credit for safety committees organized along prescribed lines. While these committees may be expected to reduce accidents, they are not always looked upon by many mill owners with favor.

While we have often found that the fire and compensation insurance companies have been willing to reduce their rates, where it was clearly shown that they were unreasonable (in one case in Boston a reduction of 40% in fire rates was granted, saving the insured over $28,000 annually), a group of casualty companies are writing steam boiler and fly wheel use and occupancy insurance at rates which are so high as to be subject to severe criticism. Because only nine companies are chartered in the United States to furnish this form of insurance, and they can nowhere near fully handle the large lines offered, competition, as generally understood, does not exist. The loss ratios of the companies is steadily decreasing and their claims in recent years have amounted to but approximately 8% of the premiums collected. Their enormous charges are unwarranted. The best remedy would seem to be publicity, and I shall be very glad to furnish interesting data to any who may wish to take this up with their agents or insurance companies.

For example, the premium of $400 for one year's insurance on a battery of twenty boilers might be legitimately taxed 60% for the cost of inspections, or $240. The annual use and occupancy premium on a plant operated by the same battery of boilers would figure approximately $2,800. A 60% loading on this premium would amount to $1,680. But the boilers have already been inspected under the direct cover insurance, and were they again inspected the cost would be but $240, or 8.6% of the premium collected, instead of 60%. The insurance companies retain this $1,680 for which no accounting seems to be made. Those remarks apply equally to fly wheel and to engine breakdown use and occupancy.

In several instances charges for mill insurance have been reduced; in one case $10,850, in another $5,600, these reductions being brought about by investigations which showed the actual conditions at the mills to be very different from what they were commonly assumed to be. In the case of the return of $10,850 which had been collected for endorsements granting permission to operate approximately 50% of the machinery at night, a checking of the production sheets for 10 months showed that but 6.7% of the machinery had been run. The charge was so unfair that the refund was made immediately upon presenting the facts.

While I might point to upwards of half a million dollars of savings brought about in insurance cost, I feel that improvement in contracts, the proper adjustment of amounts, and the wise selection of insurance companies and the proper kinds of insurance to carry, are of far greater importance. In the former case, a few hundreds of thousands may be saved—in the latter case hundreds of thousands or even millions, may be lost.

Lockwood, Greene & Company announce the opening of their Paris office at 47, Avenue de l'Opera and invite their clients and friends who visit Europe to make this office their headquarters while in Paris. W. L. Nicoll is in charge with Messrs. Smith and Walker as associates.

Taylor Instrument Companies, Rochester, N. Y., are sending out a booklet of prices and code words for use with the general industrial catalog of "Tycos" instruments. The prices in this booklet take precedent over those in the company's price list form 3546 and in their catalog form 3298.

Notes About Men You Know.

P. D. WADE, for several years superintendent of the Greenwood (S. C.) Cotton Mills, has resigned. He will be succeeded by J. B. Harris, assistant superintendent of the plant.

R. W. SMITH has resigned as overseer of spinning, spooling and twisting at the Park Yarn Mills, Kings Mountain, N. C., and accepted a similar position at the Dilling Cotton Mills, also at Kings Mountain, succeeding A. E. Penland, who goes to the Cora Mills, Kings Mountain, in a like capacity.

J. W. FARRIS, JR., has been appointed sales manager of the American Scrubbing Equipment Co., of Chicago, Ill. Mr. Farris is well known to southern mill men having visited extensively through this section.

R. DAY WRIGHT, formerly secretary to F. Gordon Cobb, superintendent of the Lancaster (S. C.) Cotton Mills, has resigned to become office manager of the Santee Mills, Orangeburg, S. C.

G. W. CURRIN has been promoted to the position of superintendent of the O'Cedar Mills Company, Covington, Tenn., succeeding J. G. Coman who has been made general manager of the company.

WILLIAM P. CARGILL has been promoted from night to day superintendent at the Loray Mills, Gastonia, N. C. C. P. Hamrick succeeds him in the former position.

W. F. DOGGET has been made superintendent of the Cowpens (S. C.) Manufacturing Company.

W. L. THRIFT, second hand in carding at the Carbarrus Cotton Mills, Kannapolis, N. C., will become superintendent of carding for the new Rowan Cotton Mill at Salisbury, N. C., it is reported. It is expected to have Rowan Mill in operation sometime in July.

T. H. CORDLE, formerly superintendent of the Demopolis (Ala.) Cotton Mills, has become superintendent of the Montgomery (Ala.) Manufacturing Company.

R. L. SULLIVAN has resigned as superintendent of the E. A. Smith Manufacturing Company, Rhodhiss, N. C., and accepted a similar position at the Avon Mills, Gastonia, N. C.

J. F. LOCKEY, who has been superintendent of the Raeford (N. C.) Power & Manufacturing Company for the past five years, has been appointed superintendent of the new Ernaldson Mill at St. Pauls, N. C.

R. H. LAYTON has become overseer of carding at the Anderson (S. C.) Cotton Mills. He formerly held a similar position at the Gibson Manufacturing Co., Concord, N. C.

J. B. MIMS has resigned his position as overseer of twisting at the Winnsboro (S. C.) Mills to accept a similar position with the Loray Mills, Gastonia, N. C.

C. Q. MASON, formerly with the Gower-Mason Electric Co., Greenville, S. C., is now manager of the electrical department of the Greenville (S. C.) Textile Supply Co. This company handles a complete line of electric goods and supplies under Mr. Mason's management.

W. L. LASHLEY has been made assistant superintendent of Roberdel Mill No. 1 at Rockingham, N. C.

C. E. DAVIS, formerly connected with the Columbus (Ga.) Manufacturing Co., has been appointed superintendent of the No. 1 Mill of the Bibb Manufacturing Co., Macon, Ga.

I. L. BRITT has resigned as superintendent of the Dillon (S. C.) Mills.

F. G. ASBELL, formerly with the Langley (S. C.) Mills, has succeeded William Steele as carder and assistant superintendent at the plant of the L. H. Gilmer Company at Millen, Ga.

BAXTER BYRD, of Liberty, S. C., is to be superintendent of the new Cash Cotton Mill being erected at Shelby, N. C., it is reported. It is said also that J. N. Dillingham, overseer of weaving at the Hamrick Mills, Gaffney, S. C., has been appointed overseer of weaving at the same plant.

HENRY GRAYSON, for three years overseer of spinning at the Hawthorn Mills, Clover, S. C., has resigned that position and will go to the Manchester Mills, Rock Hill, S. C., to take a similar position.

ELLIS T. GURRY, formerly connected with the Charlton Mills, Fall River, Mass., has accepted a position with the Jenckes Spinning Co., Pawtucket, R. I.

W. H. SHEPHERD has accepted the position of superintendent at the Holston Manufacturing Co., Knoxville, Tenn. He was formerly connected with the Kincaid Knitting Mills, Griffin, Ga.

W. Z. MCCUE, for many years superintendent of the Gluck Mills, Anderson, S. C., has resigned to take a position with the Equinox Mills, Anderson, S. C., and the Gluck Mills, which are under the same management. M. T. Grimes, of LaGrange, Ga., has been selected to take the place made vacant by Mr. McCue's resignation as superintendent of the Gluck Mills.

D. D. LITTLE has been elected president and treasurer of the Florence Mills, Forest City, N. C. He holds similar positions with the Clinchfield Manufacturing Co., Marion, N. C.

J. T. KERSEY, of many years experience and well known in the cotton mill industry, has been appointed superintendent of the Hopahka Cotton Mills, Moorhead, Miss., which were recently taken over by the Magnolia (Miss.) Cotton Mills Corporation.

J. V. MCCOMBS, for the past two years general superintendent of the P. H. Hanes Knitting Company, Winston-Salem and Hanes, N. C., has resigned to accept the position of superintendent at the Buffalo Mills at Union, S. C. Before going with the Hanes Company, Mr. McCombs was for five years connected with the New York Commercial Manufacturers of New York City, starting their mills in Georgia, Pennsylvania and Massachusetts. He began his mill career at the age of 11 years under M. G. Stone at Spartanburg and is conceded to be one of the more successful young superintendents in the South.

W. G. FREEMAN has resigned as overseer of carding at the Hanes Yarn Mill at Winston-Salem, N. C., to accept a similar position with the Hickory (N. C.) Spinning Mill.

Special Announcement

The Warren
Soap Manufacturing Co.
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Boston, U. S. A.

Will Place on the Market a Complete line of

SOFTENERS, SIZINGS, AND FINISHING COMPOUNDS

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Our representative will call in person on every mill
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2 Permanent Organizations in nineteen of the country's largest commercial centers; the oldest firm of its kind (without any material change in name or executives) and with a record of consistent service in business systems.

3 Specialists for 20 years in Accounting, Cost and Production Problems.

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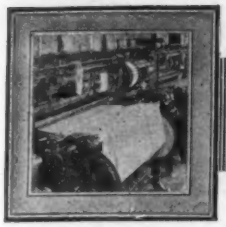
BOSTON	ST. LOUIS	PITTSBURGH	TOLEDO	HOUSTON
WASHINGTON	KANSAS CITY	DETROIT	ATLANTA	

STRAIGHT LINE METHODS



How Other Men Manage

Practical Discussions by Cotton's Readers on all varieties of Mill Subjects

A Test for Breaking Strength.

EDITOR COTTON:

That yarn produced from the same stock and on the same machinery will have a higher breaking strength when wound on tubes than when wound in skeins is a fact not generally known. If a test is made under normal conditions of some samples taken from skeins and tubes wound from the same lot of material, it will be found that the tubes will have as much as ten per cent higher break than the skeins will show.

Unless one has had occasion to contend with this trouble, it will appear quite a problem to arrive at some satisfactory explanation. In an effort to get to the bottom of this difficulty, a series of tests were made and certain conclusions were reached which are believed to be correct.

To begin with, it was presumed that there might be several causes for this weakening effect of winding yarn into skeins. The yarn would not be held compactly together, giving the twist space to loosen itself, or to allow the fibers to become more or less separated. Furthermore, skeins at their best are very hard to handle without considerable friction between the fibers, which is certainly not calculated to increase the strength. Also, skeins are more susceptible to variations in humidity than closely wound tubes and if the two are exposed to the moistened atmosphere of the conditioning room for the same length of time, the tubes will retain their moisture much longer, which of course would influence the strength.

Taking these presumptions as a foundation to work on, several counts and plys of yarn were tested with the result, as previously stated, that the skeins showed a markedly lower break than the tubes. In order to get a test which would probably be a fair average of yarn insofar as variations in the size of the single yarn are concerned, four ply, number eight was considered satisfactory, since its strength would eliminate most breaks on the winders or reels. This yarn was thoroughly tested directly after removal from the conditioning room and after it had attained a normal condition.

While the strength of the tube wound yarn was higher than the skeins, a decrease in the strength of the samples from the tubes was noted when these samples were allowed to hang open similar to skeins. This was due, of course, to a loss of moisture. The skeins showed little variation in strength when the samples were treated in this manner, proving that the tubes retained the moisture of conditioning for a much longer period than the skeins.

A difference of retained moisture and its influence on strength is well known, but size tests really brought to light the cause for the lower break of the skeins. These tests demonstrated that the skeins sized smaller, even after both samples from skeins and tubes had been left open for several days, to bring their moisture content the same.

The high peripheral velocity of the reels compared to the winders is believed to be responsible for stretching the yarn. Manufacturers shipping yarn both in skeins and tubes will do well to run the yarn a little on the heavy side for the skeins to take care of this loss in reeling. In this manner about the same strength will show up on the skeins and tubes.

Contributor No. 9.

Manufacturing 6s and 7s Weaving Yarns.

EDITOR COTTON:

For the spinning of 6s and 7s weaving yarns, the most suitable grade of cotton is 7/8 to 1 inch Strict Middling, and it is quite a hard matter to get a lot of cotton to grade all Strict Middling. I find that it is best to buy three grades, as follows: Good Middling, Strict Middling and Middling in equal quantities. This will give one-third fours, one-third fives and one-third sixes and will give an average mixing of Strict Middling.

The best method for storing baled cotton is to place it on end in a warehouse, if there is sufficient floor space. It should never be piled or stacked.

Before accepting cotton that has been purchased, a classer should be sent to the sellers to grade and staple such cotton and if there are any rejections in the lot they should be replaced before the cotton leaves the shipping point. If more than one grade is being purchased, have the classer specify the grade on the tag of each bale. In this way, anyone may be sent to the warehouse to select a mixing.

The best method of opening and mixing, if you have floor space, is to open the bales at least two days before the cotton is to be used, but, as few mills have the floor space to do this, it is usually fed into the hoppers the same day it is opened, and in this case I have found that the vertical opener is the best system on this work.

In the picking department use only two processes: breakers and finishers. The breaker pickers should be equipped with three blade beaters and operated at a speed of 1,300 r. p. m., set 5/16 inch to feed roll. The finisher pickers should be equipped with the Kirschner beater and set 1/4 inch to feed roll. Recent tests show that a speed of 1,000 r. p. m. on this beater gives the best result.

The fan speed of the finisher picker is 1,065 r. p. m. and of the breaker picker 1,128 r. p. m.

For this work I find that a 14 ounce lap gives the best results, and not over one half pound variation on either side should be permitted under any circumstances.

As the picker room is the starting point, great care should be exercised in this department. As the evenness of the work must begin at this point there should be a good, reliable man in charge of this department to see that uneven laps do not go to the cards. Pickers should be

kept clean and in good repair at all times. With good results obtained in the picking department there is no trouble in keeping even weights throughout the card room.

Card settings on work of this character should be as follows:

Back Screen to Cylinder	Full Gauge
Middle Screen to Cylinder	Full Gauge
Front Screen to Cylinder	¼ in.
Licker-in to Cylinder	.010
Licker-in to Screen	.012
Feed Plate to Licker-in	.010
Back Casing Plate to Cylinder	.022
Front Casing Plate to Cylinder	.022
Stripper to Cylinder	.022
Flats to Cylinder	.010
Comb to Cylinder	.022
Comb to Doffer	.022

My reasons for these settings are that they resulted from experiments in different settings to obtain the best results. For instance, one setting might give better results for one part of the card but for general results such as cleaning, evening, etc., I have found that these settings give the best general results for this class of work.

I make a 55 grain sliver from a 14 ounce lap and get a production of from 750 to 800 pounds per card per week of sixty hours.

The number of card wire on the cylinder is 100, doffer 110, and flats 110.

Next in importance to the pickers, in the preparation of the stock, comes the cards and consequently it is absolutely necessary that good results be obtained from them. It is necessary to have experienced card grinders who will take an interest in their work and see that the machines are properly set at all times. It is also necessary to have good card tenders who will keep the cards cleaned and and watch out for broken laps, otherwise there will result quite a lot of waste to be reworked.

Most mills, in my opinion, run their drawing too fast. This, of course, is caused by not having enough drawing. According to my ideas, the speed of drawing frames should be 325 to 350 r. p. m. but they are usually run 375 to 400 r. p. m. For this work make a 64 grain sliver on the first drawing with a draft of about 5.15, doubling 6; and a 60 grain sliver on the finish drawing with a draft of about 5.80, doubling 6. Have the roll settings as follows: first, second and third, 4/16, 5/16 and 7/16 of one inch, respectively. Drawing should be carefully watched so that no uneven work will pass unnoticed. Frequently the drawing will get behind and the tenders are likely to slip the drawing through just one process and in this way catch up with the work. When this is done, only bad work can result.

From 66 grain sliver I am producing 50 hank slubber roving with a front roll speed of 192 and roll setting of ¼ inch back to middle to ⅛ inch between the middle and front rolls, doubling 1. On the intermediates from 50 hank slubber roving I produce 1.25 hank intermediate roving with a spindle speed of about 180 and roll settings ⅛ to 7/16 inch, doubling 2.

In spinning, I use 1.25 hank roving for 6s and 7s yarn with draft of 4.80 and 5.60. On this class of work I find that under all conditions the best results are obtained by keeping the rolls set up as close as possible. A spindle speed of about 6,500 and a front roll speed of 170 to 175 gives good results on this class of work. You can, of course, run at a higher speed than this, but my experience of twenty years in spinning has taught me that where the speed is higher the spinners cannot keep the ends running and therefore you lose production. I have found that it is best to regulate the speed so that the spinners can keep the ends up, the work clean and also have a little spare time. By doing this I am able to secure better results generally and more production.

When spinning is run at a higher speed that that mentioned above, 10 to 20 per cent of the ends are down at all times and 10 to 20 per cent is going into waste. Another advantage of the lower speed is that the spinners are better satisfied. The day has passed when spinners will remain on bad running work when they can easily go to mills that have good running work. In my experience I have never had any trouble with these yarns in the weaving department and always keep a good, satisfied set of weavers. As a matter of fact I consider that it is well worth the time and attention you may give to the picking and carding machinery to get good running work and satisfied help, also good production, but, unless proper attention is given this machinery, there is no remedy and you may expect nothing except bad running work and dissatisfied help. Contributor Number 11.

Snapping Ends and the Remedy.

EDITOR COTTON:

I have in hand a letter from a Canadian mill man which says in part, "Our fly frames are in the best of condition, the tension is slack from the beginning to the ending of the set, still the ends keep snapping here and there during the set. What is the cause?"

Now, if a fly frame is in the best of condition as regards the winding-on, and the ends snap during the building of the set, it is certain that something is causing a certain amount of resistance to the passage of the strand from the boss of the flyer to the eye of the presser finger.

Here is my answer to the query: There is always a certain amount of dirt or fly on the top of every spindle and at each doff a certain amount lodges in the boss of the flyer. In time, the boss of the flyer becomes clogged to such an extent that the dirt or foreign matter is forced over the pin in the boss of the flyer. As the strand is made to pass through the eye of the boss, this matter often interferes with the passage of the strand, even if the end is hard twisted.

With these conditions, in almost every case the tender will use a wire or hairpin to remove this matter, but nearly every time it is done in this way only enough matter is removed to allow the threading of the strand.

It should be clear to the reader that if this matter is above the pin in the boss of the flyer it comes in contact with the strand and causes a certain amount of resistance which snaps the ends during the building of the set, even though the tension be perfect. The action at this point is the same as that of the filling passing over the flannel in the eye of the loom shuttle. The boss on all the flyers should be cleaned out; then better running fly frames will be the result. Wash (Conn.)

Keeping Foreign Trade Channels Open

THE over-seas service of the Irving's Foreign Division covers the full range of business and personal banking requirements abroad. To facilitate export and import operations and to supply the financial needs of individuals over-seas, the Foreign Division

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A Superintendent's Talk to Young Men.

EDITOR COTTON:

The superintendent's attitude toward the young men in his plant has a great influence for or against the plant in which they are employed. Taking the proper interest in the men around a plant has a great deal to do with the correct steering of the ship of industry. It makes a vast difference as to whether the superintendent goes through his plant with his mind so much taken up with the processes and the mechanical end of the business that he does not notice the personal element or the individuals who are his assistants in all the stations of their work, the people who aid him in carrying the load.

The difference can be clearly shown by the following comparison. The superintendent of one prominent mill in the United States made a dismal failure of his plant because the help did not pull with him. This superintendent made it his custom never to speak to his help anywhere. He never spoke to nor greeted them on the street, nor recognized them. His successor spoke to the help whether he knew them by name or not. He always had a pleasant greeting for those whom he knew personally, and would frequently talk with them and take a real interest in their affairs whenever they opened their hearts to him for advice and comfort. This superintendent was very popular with his help and made a great success of his work all through the several years during which he supervised the manufacturing affairs of this plant.

To illustrate the value and the outcome of this latter method, I will give an example of one of his talks to one of the young men of his plant. In passing through the carding department, he notices a young fixer struggling to fix a fly frame. This fixer is apparently on the verge of losing his temper and of throwing his monkey wrench at the casting which seems to be frozen and immovable from the rest of the combination. This superintendent decides to *"stop, look* and *listen,"* and observes the fixer's next move.

The fixer, by this time, notes that he is being shadowed by the chief of the plant. He renews his courage and goes at the job with a will to succeed. He applies himself more moderately, and proudly succeeds in taking apart the mechanism before the eyes of his chief.

At this point, the superintendent interrupts the fixer and asks him a few questions. The superintendent never lets on that he at first noticed that this young fixer was about to lose his temper and possibly break a bolt or strip the thread of the bolt, or of the set-screw, or of the set-screw hole. Here is what he said:

"Charlie, I am glad you succeeded in getting that casting off without breaking anything. If you keep on working like that, you will amount to something. Remember, I've got my eye on you, and hope to be able to aid you to something better in this mill, or in some other mill some day. Just keep right on doing your very best. You know, Charlie, competition at the present time is very keen. Labor costs a great deal, and the value of supplies runs very high. Just save all you can. Keep on being very careful not to break parts, and put things together as rapidly as you can. A machine, you know, while being fixed is producing nothing, and eating up profits very rapidly. Keep the belts on the tight pulley all you can. Let me tell you another thing—look out that the machines are properly oiled, and

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NEWPORT COLORS

"COAL TO DYESTUFF"

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This happy condition means to us a uniform and assured supply of raw materials, and a single great organization to handle every manufacturing process. To consumers it means that we have no one with whom to divide responsibility—that we must stand squarely behind every Newport product. Is it any wonder that *Newport Dyestuffs are Standard?*

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adjusted. It prevents wear and tear, and you will not need to work as hard. Preventing wear and tear and breakdowns is more important and vastly cheaper than fixing things afterwards.

"Let me see how well you can do on this job this year. There may be something in it for you some day. Take good care of yourself. Get to bed early nights. Keep yourself in the best trim possible. Look out not to get any bad habits. Don't lose your temper, and *never swear!*

"I hope you are attending some church and Sunday school every Sunday, and helping us to make the world better. It will not only pay back what our forefathers did for you and me, but it will make better working conditions for all of us. It also helps to kill stagnation. Invite somebody to do likewise with you, and in the mill here you *show the other fellows* how to work up the same as I've shown you, and you will see how well it pays. It will make the stock run better, and you will not have to work so hard."

The superintendent passes on to other parts of the mill, and drops the same type of story to some other needy man. The young fixer feels that he has just had the treat of his life. "Yes," said he, to one of his associates named Pete, "I've been given a fine talk by our superintendent. He's all right. I like to work for him. Let us do our best to get the biggest results possible. The superintendent says he's got his eye on us. Now we must work like beavers, and prove ourselves ready for promotion later on if a chance should come along."

This superintendent has friends like this all through the mill, and things are moving along from prosperity to prosperity by leaps and bounds. Six months after this conversation with Charlie here is what actually happened.

The overseer of carding needed a new second hand. He noticed that Charlie had made a fine record on his section as fixer. Charlie is told to report next Monday morning and be promoted to the position of assistant overseer, and for him to tell his associate Pete to be promoted to take the young fixer's place.

A year later Charlie is found down in the superintendent's office to listen to another talk. "Charlie," says he, "your boss has been promoted to be a carder in another and bigger mill. I want you to be my carder, and you had better tell Peter that you want him for your assistant. He seems to be doing well."

Enough has been said to prove the merits of such an attitude for both sides at this carefully supervised plant. There are no swearing men. There is a deep sense of honor among the help. The product of this plant has a high reputation, and there are never any labor troubles.

This superintendent has been offered many larger and better paid positions, but his company always meets the situation by giving him more than the other fellow offers, and the superintendent stays on his old job, making the men and the business better each year. He is cheap at the salary he receives, although it runs into five figures.

Another man in the same class is said to be just as cheap in another large plant at a still higher salary. It is in the men and not the job. These men make these jobs what they are.

Let the young men enter our mills. Give them a chance. Do not kick them around. Handle them *right,* and they will win out.

Good Stuff. (R. I.)

Suggestions for Improving Production.

EDITOR COTTON:

There are many details to be considered in order to fully cover the point of your Prize Contest question, "How to preserve quality, increase production and reduce the unit cost." In preparing the following discussion I have tried to outline some of these details, as I see them, with the hope that other correspondents will enlarge upon some of these points from the fullness of their experience along some particular line. Such an action will undoubtedly prove of much value to all concerned.

A great many of the large corporations have, in the past, sold the houses that the help lived in, to different real estate corporations. Other large textile industries have built more mills in the same cities and have trusted to the real estate people to build and rent houses for the operatives to live in. Particularly is this true along the North Atlantic seaboard. The consequence is that the rents have gone up in price, out of all proportion to the wages earned by the textile operatives, which has caused many of them to go into other industries in order to earn more money. It is not too late for the different textile manufacturers to start building houses to rent at a figure that will be a small profit to them and will be a great saving to the heads of the families that furnish them with textile workers. The writer realizes that today the cost of building material and labor is all out of proportion with normal times, but the time is not far away when the cost of material will undoubtedly drop and, systematically, the different textile concerns could start to build. The southern mills already have this system working successfully.

A department store could be run on a paying basis that would give the operatives a chance to buy their provisions, clothing and other necessities of life at a reasonable cost and avoid the profiteering of the so-called middle men.

There are a good many concerns that feel they are forced to buy cotton that is somewhat inferior for the numbers they are spinning, owing to the high price of the raw material. This has a tendency to cut down the production by bad running work and the need for more twist. This would naturally cause the operative to make less money and work harder, and, at the same time, produce a poorer quality and a harsher piece of cloth which will not finish and appear as well as a piece of cloth made from softer spun yarn. And, of course, under such conditions, we expect to make more waste and it will be impossible to keep the machinery and floor in a neat and tidy condition. It also requires more oil, more repairs and more power to take care of the extra speed.

Any extra speed naturally reduces the number of spindles and other machinery per operative, which, in turn, will either reduce their earnings or force the manufacturers to pay more per spindle, hank, or cut of cloth. In the writer's judgment, it would be far better to use the proper staple and quality of cotton for the number being spun, do not use a speed too high, and give the operatives more spindles and other machinery to run, or, in other words, do everything possible to make the work inviting and easy for the operatives.

I believe that the card and drawing cans should be as large as practical so that unnecessary doffing would be eliminated. The slubbers, intermediates and speeders should have as long traverse as could be run at a normal speed, thereby giving the operatives more spindles to look after. This would reduce the price per hank and give a larger production in pounds per hand.

The spinning should have the proper gauge and separators to eliminate unnecessary breakage caused by the ends whipping together; also use as large size rings as possible and a long traverse bobbin, which would give a greater amount of yarn per bobbin.

Double roving should be used on all warp yarn finer than 25s. It has been proven by most practical manufacturers that a double roving will give an evener and stronger yarn with less twist than a single roving.

The doffing facilities should be very carefully considered. A doffing truck should be procured that will hold empty bobbins at both ends, and the box for receiving the yarn should be of a size that can be taken direct to the spoolers and placed on a shelf or platform, thus avoiding unnecessary handling of yarn and empty bobbins.

It is very essential that a spooler tender should run as many spindles as possible, and in order to do this it would be necessary to run a low spindle speed. This speed should be determined by the number of the yarn being spooled and the class of cloth it will be used for. It is a very good idea to run as long traverse spools as possible instead of a short spool with a large diameter head, as a large diameter head spool will vary considerably in speed from a full spool to just before it is doffed on the warper. It is much more economical to have ample spooler spindles to handle the work going through this department. It would be much better to have one or two spoolers standing idle at times rather than have yarn accumulate ahead of the spoolers.

The warpers should have a creel that is absolutely level and should be built so that the skewer steps will keep the heads of the spools away from the uprights. The creel should set back at least 36 inches from the back or comb of the warper. The warpers should never run fast, as too much speed causes breakages of the yarn.

All beam heads should be absolutely true and should be kept properly tightened. A wrench should be kept either in the slashing room or at the warpers and at least once in two weeks, all beams should be tested to see that the heads are tight. It is a good policy to have all the warpers necessary so that they may be run slowly, and then give a girl as many as she can run, according to her experience and ability to handle the work.

It has been found that it is better to run more section beams with less ends per beam on a slasher, as it will give the yarn a better chance to separate, which will cause it to run better in the looms.

Great care should be used in the mixing and cooking of the size. A corn starch mix should never be cooked less than 1¼ hour. There are lots of different formulae for size, and I dare say a great many are used that are suitable for the especial class of goods being woven. The writer is using a formula that is no different than a great many other concerns are using, excepting the gum, or, better known, as size. This formula is made as follows:

Preparation kettle No. 1.
30 Gallons of water,
50 Pounds of sago flour,
Mix together and boil for one hour and fifteen minutes.

Regular size kettle No. 2.
100 Gallons of water,
100 Pounds of corn starch,
20 Pounds of size gum,
5 Pounds of tallow.

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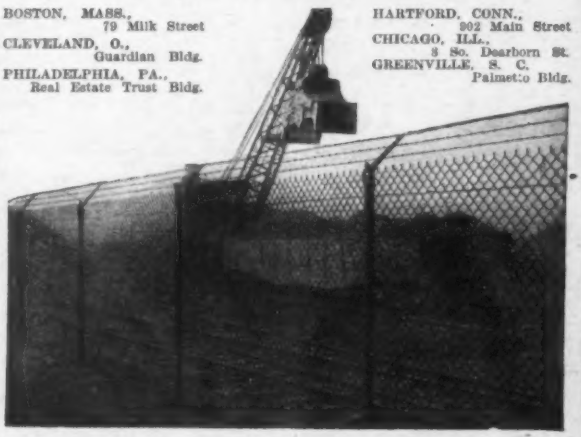

2289-G

Anchor Post Fences

Add the mix of sago flour from No. 1 kettle, also water enough to make 225 gallons, boil for one hour and fifteen minutes. Then add water to bring the mix up to 238 gallons.

A great deal of judgment is required at the slashers. If the looms are running very close on warps it will not be necessary to keep as high steam pressure on the cylinder. It is a bad policy to have too much pressure on the cylinders and then run them too slow. It has a tendency to bake both the yarn and size, which takes the life out of the fibers and destroys the necessary qualities for adding strength and durability with the size.

Reeds and harnesses should be handled with care. Reeds should be in first class condition before going to the drawing-in girls, or drawing-in machine, or a knot tying machine. The harnesses should be made from the proper number of yarn and right number of plies for the class of work being woven. Every drawing-in room should have a rack properly spaced and numbered for the reeds. The harnesses should be cleaned, and, if not going direct to the drawing-in machine, should be hung in sets on a rack comprised of cast iron sword arms. It is a good policy to have a slight rise, or ball end, so that the harnesses will not jar off of the sword arms.

Great care should be used in piling warps on the floor especially after they have been drawn-in. A great many reeds and harnesses are spoiled after they have been drawn-in and before they have been put in the looms.

When a warp is being placed in a loom, the fixer should see that the warp is properly drawn in and that there is no spreads in his reeds and the harnesses are the proper width for the loom so that the warp yarn will not come from the beam at the selvage with too great an angle. The yarn should run as straight from the beam through the drop wires, harnesses and reeds as possible, as selvage difficulties cause trouble not only in weaving but in every process in finishing and manufacturing the cloth for the trade.

A whole book could be written and has been written on weaving, and all practical men from loom fixers to the management know what conditions they have to meet in their own weave room, and it would be folly for anyone not familiar with their conditions or class of goods to try to tell them what to do to improve either the quality or quantity of work.

The cloth after arriving in the cloth room should be handled in a very systematic way so that it will be properly checked against the cut board in the weave room.

I have found it a good plan to put a strip of hard wood which is marked as a measuring device from $\frac{1}{8}$ of an inch up to the width of the inspecting machine. This allows the hand on the inspecting machine an opportunity to ascertain the width of the cloth when starting to inspect a roll and then it is a good plan to measure it again in the center of the roll and also measure the width again at the end of the roll before sewing on a new roll.

With the price of cotton cloth as it is today, and the present quality of cotton being used, together with the carelessness on the part of the operatives, it is very essential that the inspectors in the cloth room are properly paid so as to obtain honest, steady and reliable women or men who understand the measuring of first quality and seconds. It is just as essential to pass through as much cloth into firsts as it is to draw the line on seconds. And the manager or superintendent of a mill must realize that the entire condition of his mill determines at how high a grade his first quality should be rated. There are numerous systems and conditions under which a cloth room can be managed which depends mostly on the type of men in charge.

I have now covered as much of the manufacturing as I consider necessary, as I expect it to be read, in order to be appreciated by practical mill men. I will now take up the question of management and the attitude of the help until we reach the so-called managing body.

Every group of operatives should come under the supervision of a foreman. To illustrate the writer's point of view, we will call each position, where a man has charge of any number of hands, a supervisor. He might be known as a section hand, or fixer. We would classify him as a supervisor in his position in a minor way, the same as you would classify the general manager in a broader sense of the word.

The first mentioned section hands, or fixers, in the various departments of a textile mill should be as intelligent if not more so than the hand or hands who run the different machinery that these supervisors have to fix and keep in good running order. They should study each hand under them and try to have an influence over them. They should be just and impartial with every hand in their section, giving the first come their services and continue to treat them with courtesy and serve them in their turn.

Next will come the supervisors known as third hands, or second hands. These men should be picked from the very best fixers or section men. They should have direct charge over the entire help in their department, and should instruct and see that the orders, which they give the fixers and section men, are carried out. They should encourage a close cooperation between the different operatives in their departments. Each hand should be taught to do everything possible to use the supply of material from the preceding hand or hands, and to deliver their work in quality and quantity so that the help receiving their work will be constantly occupied, and so that there will be no loss caused by machinery being stopped for lack of production from the preceding help or machinery which is supposed to supply them and their machinery with stock to keep them constantly busy.

The overseer of the department should consider himself not only a supervisor of all machinery and help under him, but he should consider himself an instructor and a judge of human nature; another of his duties which should be considered very important, is in finding ways to encourage and enlighten the help in their different tasks. He should personally talk with each hand that has any grievance with any of the other supervisors in his department and who are under his charge.

In my judgment there are many operatives discouraged and dissatisfied on account of misunderstandings about orders and not fully understanding what their duties are and the relation to them of the different supervisors. It is a very bad policy to have any of the help feel as though some one was watching them for an opportunity to discharge them. A better attitude would be to let them know that they were being watched over for the simple reason of finding their different weaknesses so far as their position and duties are concerned; and to see that they do not become careless and neglectful or interfere with other people's work and time. It should be pointed out to them in a friendly way that it is as much of a loss to them in wages as it is to the stock-

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holders of the company to waste, break or abuse any supplies or furniture connected with the mill. If it could be brought home in the right way to the different operatives that any reworked stock caused by unnecessary neglect or waste has a tendency to not only make the quality of the finished goods inferior, but it also causes the work to run badly throughout the entire mill; and also that it is absolutely necessary to use this cotton that is known as waste, from whatever cause, and that it has to be returned to the pickers; it would doubtless aid greatly in securing their cooperation.

The general overseer or assistant superintendent should be a man that has worked up through the various departments, and showed his ability in the different positions he has held as supervisor in such departments. In large mills there are several of these men and they should always avoid an angry discussion with any of their subordinates. If there is any possibility of a misunderstanding or a discussion it is a very good plan to take the party or parties who are at fault into an office and discuss the subject between themselves and not at any time show any discord in the management to the help who might be under the different supervisors.

The position of a general superintendent should be one of trust and the man holding it should be looked up to as the man to keep the entire manufacturing organization working together. He should keep in close touch with his different departments heads and look over their reports and discuss the reason for loss of production or an unusual high cost in a department. He should consider that the men, who have worked themselves up to become department heads or superintendents, have been treated in probably a different way than that the general superintendent has himself encountered, and he should not consider that these men under him are incapable of handling their departments and laying out their work in such a way as to obtain the best results.

The different ideas and ways of managing men or departments is a thing that will have to work itself out, and the success of the mill alone will show the ability of these men to handle the part of the mill that has been intrusted to them.

It is a very good policy for the general superintendent to occasionally walk through the different departments and have his attention drawn to different conditions and listen to the suggestions made by his men. The relation between the different supervisors will depend a great deal on the way their supervisors handle them. It is a great deal better to have the help look up and respect the men over them than it is to have the help fear or dislike their superintendent. The help should be made to realize that the superintendent's position is equally divided, that he gives to the help the same consideration that he does his own superiors. He should be willing to hear a fault or a grievance that affects the help, as he would to carry out an order given to him by his own superior officer.

The conditions today in a textile plant are far different from anything that has existed heretofore and every method has got to be used to encourage the help to work with the management and understand that they are getting and will get a square deal in both pay and working conditions, if they trust their supervisor and work in harmony with all who may be placed in charge of the machinery and the stock with which they are earning a living. It is a great deal better for the help to understand that their superiors are looking more to the quality of the product and the condition of the machinery, than they are in showing their authority over the workers. There are very few men who wish to show undue authority over anyone employed under them.

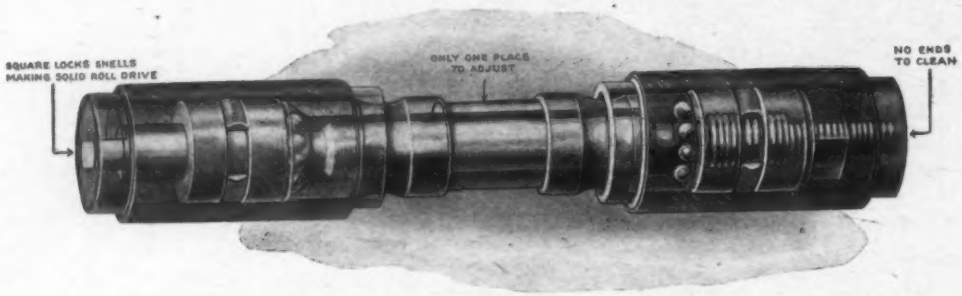
The agent's position is a very trying one. His chief duties are to keep close in touch with the policy of the directors, which usually comes through the treasurer; to see that the superintendents under him are capable men in every way, to look after the upkeep of the property; and to represent the company in the city, town or village in which the mills are located. He is also held responsible for any neglect on the part of the superintendents or anyone under them. Should any accident occur, that any person or persons were killed or injured through neglect on the part of the company's sub-managers, he would be the man that is held responsible. It is also his duty to look after the moral condition of all employed under him, also to look out for sanitary conditions surrounding the plant and the village. He should see that the proper respect is paid to old employees of the company. The quality and the cost of the goods is a very essential part of an agent's duties, and he should be closely connected with the selling house. He should try and avoid getting any class of work into the mill that the mill equipment was not adapted to manufacture economically. He should keep close watch of the different styles and see there was not an unnecessary number running at one time. In fact, he is holding a position which should be looked upon as a direct representative of each stockholder, and should try and use the same judgment and caution as he would if running the mill for himself.

In other words, the residential agent is holding a position that involves so many details, both large and small, that it would take up a great deal of space should I try to explain any further.

A great deal could be said regarding the relation of the different men in charge. If the man at the head of a concern keeps his men in a nervous and fretful condition, they are not in the proper mood to do justice to their experience and apply it to the best advantage. Neither can they handle the people under them in a manner that will breed content. It is proper for a man to show energy and see that the proper discipline is carried out, but it should be done in a way that will not offend or depress the people under him. No man should feel that it is necessary to have any one under him fear his presence, or dislike to bring things to his attention, for a great many conditions will exist that will in the end, if not looked after in time, cause serious results later.

The relation today between the employers and the employees is a much greater problem than has ever before arisen and anything that can be done to make for closer and better relations between them should be undertaken that might improve this relation, as brief a notice as possible should be given. The ordinary operatives are very sensitive regarding a new condition or method to be used by them or for them. It has got to be proven that the new system will be a benefit to them direct, as well as a benefit to the people they are working for. And after it is shown to them that it will naturally benefit all concerned, then they are ready to do their part.

Their welfare should be taken into consideration, and anything that can be done to promote welfare work and interest them in clubs and athletic work should be taken up by



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someone who understands this particular class of work and is not crowded with any other duties. Of course the management throughout the plant will have to cooperate with and support the one who might be chosen to handle this branch.

In conclusion, I will say, these are simply the views of one man and they may be added to or subtracted from as the different minds see it. In any case, further discussion can but prove interesting and enlightening.

Contest Letter No. 28. G. F. P. (Canada.)

Carding.*

BY MARSHALL DILLING.†

In the years that are past most mill men thought that it was necessary to use four processes of pickers to properly prepare the cotton for the cards; but as improvements were made in picking machinery it became evident that the cotton was being handled too much and that the fibers were being injured by so much beating that it was found advisable to eliminate one and two processes, and at the same time reduce the speed of the beaters, so that today the handling of cotton through the pickers has been reduced from 25 per cent to 50 per cent and in almost every case with an increase in the breaking strength and just as clean yarn as ever.

Some of the ways of doing this is by the use of blowing and suction systems, condensers, C. O. B. machines, etc., which remove the dust and dirt as well or better than beaters, and it is done in a manner that cannot injure the cotton, but on the other hand restores it to its original and natural condition.

Another idea is that by feeding light it is possible to remove the foreign matter from a thin or light sheet of cotton much easier than from a thick or heavy sheet, and by feeding light the cotton can be cleaned with less beating and of course with less injury to the fibers.

Many of the ideas advanced as being beneficial to picking are applicable to carding as well. While the pickers must handle the cotton in bulk, the lighter the bulk the better it will do its work and the better it will make the condition of the cotton for the card; so the lighter the carding the better chance the card has to do its work of carding and combing out the cotton. In fact the card must be able to handle each fiber of cotton separately and individually if it is expected to do its work properly, and this can be done only by feeding the cotton light enough to allow it to go through the card so that each fiber can be handled separately. We must all admit that if the cotton is fed to the card so heavy that it does not have time to separate each fiber from each other fiber that it cannot be expected to remove short fibers and foreign matter and comb out and straighten out the long fibers. It is the consensus of opinion that it is better to feed light and rush the cotton through the card than to feed slow and heavy and keep the cotton crowded in the card.

No set rule can be given for card settings, as they must be governed by the kind, quantity and quality of cotton being carded. The first and probably most important setting is at the licker-in, as it is possible to do great damage to the cotton at this point. If there is not room between the feed plate and licker-in the fibers will be crushed and broken before they will separate themselves. The cotton when leaving the feed plate and roll should have sufficient room to expand so that it will separate without breaking; while if there is more space than is needed the cotton will be delivered to the cylinder in bunches and without being combed out as the licker-in should do. It is an important matter for the superintendent and overseer in each mill to study their local conditions, find out what is best for their own needs and be governed accordingly.

The most noticeable thing about drawing today is that mills are giving it the attention and consideration that the importance of this process demands, and even the machinery builders have realized its importance and are giving us machines that can be set and adjusted with the same ease and perfection of other machines in the mill. The greatest need along this line today as indicated by the answers received is more machines to enable the sliver to be lightened and the speed reduced. An important feature about drawing that has been overlooked to a large extent is the proper proportion and distribution of the draft between the different rolls. This trouble is found in many cases where the draft has been changed by simply changing the draft gear, which not only changes the draft but changes the proportion between the different rolls. In changing the draft it is important to see that this proportion is maintained between the first and second and third and fourth rolls by changing all in proportion.

One of the most important features in connection with roving frames is the twist. Many mills do not have enough roving frames to properly balance their spinning, and have to make heavier roving than should be used, which usually makes short drafts. And on the other hand many mills do not have enough cards and drawing to balance their roving, which usually makes long drafts necessary, either of which is harmful and should be avoided as much as possible.

At our last meeting the question was asked, "What effect does the twist in fine roving have on the breaking strength of yarn?" I have recently made some tests along this line with the following results:

First test, 11 hank roving was used to make No. 58s yarn by using 200 bobbins of roving to make 100 bobbins of yarn of each twist. Atmospheric condition very damp.

Twist 4.22 turns, yarn sized No. 56.09 and broke at 36.24.

Twist 3.86 turns, yarn sized No. 56.12 and broke at 35.35.

This shows .0241 per cent in favor of the hard twisted roving.

The second test was made by using the same hank roving to make the same number yarn and with the same number of bobbins, with atmospheric conditions dry and windy.

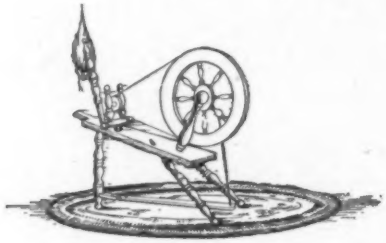
Twist 4.22 turns, yarn sized No. 57.74 and broke at 33.53.

Twist 3.70 turns, yarn sized No. 58.34 and broke at 34.52.

*Results of a Questionnaire Sent Out by the Southern Textile Association and Delivered at the Recent Meeting of that Association in Spartanburg.

†Superintendent, A. M. Smyre Manufacturing Co., Gastonia, N. C., and Chairman of the Committee on Carding.

COTTON YARNS BOUGHT, SOLD AND EXPORTED



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This shows .0292 per cent in favor of the soft twisted roving.

The third test was made by using the same hank roving to make the same number of yarn and with the same number of bobbins, with atmospheric conditions normal.

Twist 4.22 turns, yarn sized No. 57.37 and broke at 36.54.

Twist 3.86 turns, yarn sized No. 58.51 and broke at 35.68.

This shows .0226 per cent in favor of the soft twisted roving.

The average for the whole test showed that the soft twisted roving produced yarn that broke .012 per cent stronger than the hard twisted roving.

Spinning.*

BY CARL R. HARRIS.†

In compiling this paper I have given you answers which are represented by the majority of the questionnaires, and in a few cases where an answer was radically different from the others I have given you that answer merely for your information and comment.

My understanding of the questionnaire system is that it is intended to find out how the majority of spindles are doing a certain thing. If this majority is great enough then that answer is considered correct. For example, if 1,900,000 spindles out of 2,000,000 give practically the same answer to a question, then we consider that information the best obtainable.

Some of the questions have been misunderstood by those answering them and some did not answer part of the questons, therefore I cannot give you definite answers to those, but when the next questionnaire is sent out probably these questions will be cleared up.

Question No. 1. Does it pay to have spindles "plumbed" every year or does it do just as well to "plumb" them one year and set the spindles at the top next year? In other words, do the results justify the expense of overhauling spinning thoroughly every year?

Answer. The majority believe that the cost of thoroughly overhauling every year is more than offset by the increase in production and saving in power, especially when spinning numbers as fine as 40s or 50s.

Question No. 2. When "plumbing" the spindles do you level the ring rails cross-ways as well as length-ways? How do you do this?

Answer. The answers to this question were indefinite. While the majority stated that it should be done, very few say they do it. One superintendent says "It is not customary to level the ring rails cross-ways, but it should be done." Another states "Ring rails should undoubtedly be leveled cross-ways, but I do not think we have ever had to level them here."

In the few cases where they are being leveled the majority do so by taking out two ring plates at the lifting rods and then file the lifting rod shoe until a small spirit level across the rail shows it to be true.

This is worth while for the superintendents and overseers to look into, for where the ring rails are not level cross-ways it is impossible to "plumb" the spindles accurately.

Question No. 3. What is the best distance to set guide wires from top of spindles on No. 30s warp. Give your reasons.

Answer. Highest 3¾ inches, lowest 1¼ inches. The majority seemed to be getting good results with 2¼ inches. This gives a good uniform traveler pull, holds the balloon down when the traverse is at the bottom of the stroke, and does not put too much tension on the yarn when the traverse is at the top of the stroke.

Question No. 4. What is the best remedy for roving and thread "lapping up" around steel rolls?

Answer. Give rolls a thorough cleaning every year, and then keep them clean. Spanish whitening and gasoline give good results. Avoid long drafts when possible, and see that the draft is properly proportioned between the rolls. See that the rolls are set for the staple of cotton being run; 1/16-inch in excess of staple gives good results.

To prevent thread lapping on the front roll, pick stands every week with copper stand hooks, and keep the roll clean, and where there are burrs on rolls, remove with a flute file and pumic stone.

Keep good scavenger rolls.

Question No. 5. What size band do you use to drive your spindles, that is, how many bands to the pound? Is it made of roving or yarn? How many turns per inch in roving and what size roving? What is the size of your whorls?

Answer. The answers show an average of 99 bands to the pound; 3.90 hank roving; 5.2 turns per inch; 13/16 inch whorls.

With but one exception roving was being used altogether. And as light a band as local conditions would allow was preferred. This shows a radical change in the last few years. Ten years ago all, with probably one exception, would have been using yarn instead of roving. The question naturally arises, "Has the automatic band machine brought about this change, or does roving give better service?" We trust that the committee will give us more information on this at the next meeting.

Question No. 6. Can you get more twist with a band of small diameter than with a band of large diameter? Give your reasons.

Answer. Yes, the small band will fit nearer the bottom of the whorl. This gives a larger ratio of speed between the cylinder and whorl, therefore more spindle speed.

Question No. 7. Do you have your spinners do their own cleaning or do you have extra help clean the frames? If you use extra help for cleaning, explain whether you have made any saving or whether it costs more?

Answer. Out of 2,000,000 spindles, 1,900,000 do not use extra help for cleaning. In the few cases where they do use extra help, the answers would not indicate any saving. And in one of these cases they are seriously considering making a change, and having spinners do their own cleaning.

Question No. 8. Do you oil lifting rods?

Answer. The consensus of opinion is about evenly divided on this. In all cases where they do, they use pure

*Results of a Questionnaire Sent Out by the Southern Textile Association and Delivered at the Recent Meeting of that Association in Spartanburg.

†Night Superintendent, Mill No. 3, Lancaster (S. C.) Cotton Mills, and Chairman of the Committee on Spinning.

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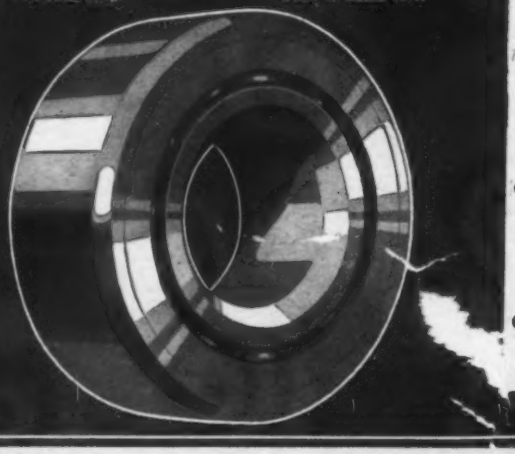

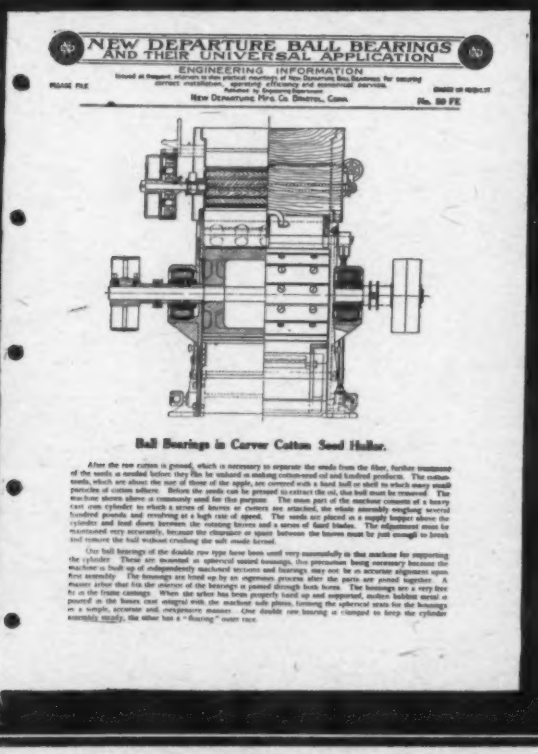
NEW DEPARTURE BALL BEARINGS AND THEIR UNIVERSAL APPLICATION
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Ball Bearings in Carver Cotton Seed Huller.

lard oil. And those using it are very enthusiastic over the results secured.

Question No. 9. What is the best method of running a traverse on 40s filling, up slow or down slow? Which method will best prevent the filling pulling off in bunches in the cloth?

Answer. A total of 1,750,000 spindles were represented in the answers to this question. The management of 1,456,000 claim that running the traverse down fast and up slow best prevents filling pulling off in the cloth. Yet quite a few claim that the running of the work is improved by running the traverse up fast and down slow. The chairman of this committee should give us more information on this at our next meeting.

Question No. 10. What spindle speed will give the best results on 40s filling? On 30s warp?

(We would realize that this question should have the front roll speed coupled with the answers. And next year this should be included, because if spindle speed is reduced and front roll speed reduced also, we all know that the work would run better, but the question to decide is, "What is the highest or best spindle speed to use in order to get maximum production?")

Answer. On 40s filling the answers show from 7,100 r. p. m. to 9,600 r. p. m. with an average of 8,061 r. p. m. And on 30s warp they show from 8,200 r. p. m. to 10,000 r. p. m. with an average of 8,975 r. p. m. In practically every case the indications are that a moderate speed is preferred.

There was one answer so much better than the others I want to make special mention of it. One superintendent states, "We are running a spindle speed of 10,000 r. p. m. on 30s warp; this may seem excessive but we are getting 118 r. p. m. on the front roll."

As I am not permitted to use the names of any mills and as I did not have time to write this superintendent for more details, the chairman of this committee should ask this superintendent for full details before our next meeting so that we can give the association the benefit of this exceptional case.

Question No. 11. Is it best to have several doffers work on one frame at the same time or each doffer to have so many frames to himself?

Answer. Superintendents and overseers for 773,356 spindles claim that the best results are secured by using two doffers to a frame. For 611,148 spindles the preference is one doffer to a frame. For 264,684 spindles having four doffers to a frame is preferred.

Please note this information shows a very marked change in the method of doffing in the last few years, as we all remember that only a few years ago practically all doffers went in squads of four.

Question No. 12. What is the best method of using up filling that has become dirty by falling on the floor or has oil on it?

Answer. Practically all mills weave this kind of filling up on special looms set aside for that purpose, and sell the cloth as seconds, while a few still cut it off and sell it for waste. Those who are still cutting off this filling could save considerable money by adopting the plan which the answers show that a majority of the mills have done.

Question No. 13. Which is the best method to run warper beams, forward or backward? Give your reasons.

Answer. The majority claim that by running beams backward, or in other words, running the beam away from the warper tender, that broken ends can be gotten up quicker, and with less chance of getting them crossed, thereby saving a lot of trouble at the slashers.

Question No. 14. How many yards per minute should go through a warper on 30s warp using a 4 x 5 spool?

Answer. Highest, 100; lowest, 33; average, 53 yards. This happens to be very close to what the builders recommend. On 30s warp they recommend about 50 yards per minute. Considerable comment could be made on this. We all know that the lower the speed the less breakage there will be. The question arises, "Would it pay to cut the speed in half and run the warpers day and night?"

Question No. 15. What idea have you developed in your room that has made a noticeable improvement in the running of your spinning?

Answer. The most noticeable ideas brought out were as follows:

Reduced spindle speed. Will quote an overseer's remark in connection with this: "The thing that has made the most noticeable improvement in the running of our work, was cutting down the spindle speed about 175 r. p. m. to the present speed, 8,700 r. p. m. on 30s warp." It will be noticed that this is 275 r. p. m. less than the average proved to be in answer to question No. 10.

Systematic oiling and cleaning.

Keeping the proper humidity.

Keeping plenty twist in roving.

The last mentioned is one answer that there were very few exceptions to. Practically all mills are putting more twist in the roving than is laid down in our text books as standard. The question for us to determine is, "Is it possible that all the mills are wrong in doing this, or is it that the twist tables which are laid down in our present text books are wrong?"

Adding weight on rolls. This is a question to which I cannot give you a definite answer because the questionnaires did not answer it fully. Probably some of the men did not think it important enough or had not had any experience in changing the weight on top rolls. I know of some few instances where mills are experimenting along this line and as this is a very important question to decide we hope to have more information by the next meeting.

Question No. 16. What do you consider the greatest needs in the spinning rooms of the South today?

Answer. The most prominent ideas brought out were as follows:

A good cotton grader, to staple all cotton going into the mill.

Reduced speeds. (But the answers did not reveal whether production was also reduced. This will be brought out at the next meeting.)

More efficient second hands and section men.

Proper oiling.

Pay on an equal basis with other departments of the mill.

The last mentioned seemed to be the uppermost idea at the time this information was gathered, but as that is fast becoming a thing of the past I have arranged them in the order of their importance, as I see it.

Question No. 17. At the Charlotte meeting last October

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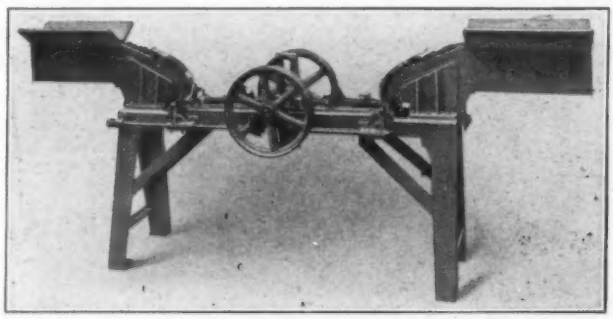

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the following question was asked by J. M. Gamewell, of Lexington, N. C., and as our questionnaires did not contain this question, a number of superintendents and overseers were written and asked to give their opinion based upon their actual experience.

The question is "Will putting a tooth of twist in fine roving increase the breaking strength of the yarn coming from the spinning frame?" This question is intended to apply to 30s warp yarn.

Part of these answers claim that the breaking strength will be increased, while others put up strong reasoning that it will not. The question naturally arises, "Why is it that practically all boss spinners, want extra twist put in roving?" This question will be more fully discussed at the next meeting.

Slashing and Weaving.*

BY A. T. QUANTZ.†

Slashing usually comes first under the subject of weaving, so I will take a little time in reviewing some statements that were made at the Charlotte meeting. Some of you remember that it was said that sizing could not be made at more than 192 degrees in an open size box, if so the size would boil out of the box. I have tested this question of temperature since that time and find 208 to 210 degrees is really what you should have. Why could some people not operate with more than 192 degrees of temperature is the question. I am reasonably sure you will have no trouble operating with 210 degrees if your steam coil is in the proper condition. Be sure the holes in the coil are of uniform size so the steam will be distributed evenly in all parts of the box. If there is a blow hole or a large opening which will let too much steam escape at one place, it will be very apt to blow the size out of the box instead of boiling it out. A steam coil should be so arranged that the steam will blow slightly upward. I have found them fixed so that the steam would blow downward, this will keep all of the lumps in the box stirred up and cause spots on the yarn. It will also bore holes in the box lining if left that way very long.

This seems like a mighty little question to be brought up here, but it is the little things that keep us in trouble all of the time; little thing are really big things some times. Let me tell you about what I think one little thing once did for a mill. The sheriff had been right after that mill for years. The situation was this: the mill was small and had only one slasher, and it was built wrong. Therefore every warp had about the same bad treatment. The yarn was fair, but the weaving was poor. I knew the reputation of the weaving long before I ever saw it, and often wondered what was wrong; the whole trouble was with the delivery rolls. These were so arranged that they would not deliver the yarn without the help of the friction. You will see from this all of the yarn was more or less stretched or broken. After this was discovered it took only a short while to fix it, but it had gone so long its reputation was known far and wide, and no one ever believed the weaving could be made to run at that mill. I know of another mill that had the same conditions and a similar reputation. There may be more running that way today. If so and they are on coarse work, it is not so bad, but if on fine work I would not want to weave the yarn.

All of these conditions are due to lack of knowledge in this department. A well trained man in the slasher room is a very profitable investment. It is not good business to buy the best starch and compounds that cost thousands of dollars and have an untrained man to use them.

It is not so much the ingredients used as it is the way they are used. This important department has been neglected more than any other part of a mill and the weaving room pays the bill.

There are a number of appliances on the market that will help to improve all of these conditions, and we may expect still more improvements since this movement has been started.

After you have your warps well slashed, and the yarn is strong enough for you to use the Barber-Colman standard stretch on your tying machine, you should have good weaving.

We will now take up the problem of the weave room proper. According to the questionnaire, the biggest problem today is loom fixers. Almost every one expresses this need. The only answer is to provide a way to teach men to fix. The lack of training is no doubt the cause of so many giving up this work before they really know how to take advantage of a section. You may have a number of good loom fixers, and not have a single one that can teach anyone else how to fix. A mill of 30,000 to 40,000 spindles can afford to have a certain man whose business it is to teach new men. Overseers should study how to teach this art. I consider this a very important part of their work.

It is not reasonable to expect one man to do your way when he was taught by some other man to do another way. I find the fixers who are the most contented and get along the best are the ones who try to have their looms well cleaned when the warp is off and then make what adjustments are needed and oil the parts that they know the oiler is apt to pass over. If you can convince a fixer of the fact that he will have to do less work in this way, and get him to try it, you are more likely to keep him satisfied and he would never want to fix any other way.

A fixer who keeps his brakes in good order will also do less work and get along better than one who thinks a brake is more trouble than it is worth. Don't ever give up; keep on until you do convince your men you know what you are talking about.

Arrange by numbering or otherwise marking the harness patterns when they are taken off of the looms so that the fixer will get the same pattern back every time. This will have a tendency to get the patterns in better shape for the tying machine. After working this way awhile the fixers will have less work setting harness, they will also be left in better condition when the fixers know they will have the same harness to run all of the time. It is the lack of training that causes most all fixers to have different ideas about fixing.

*Extracts from a Paper on this Subject Delivered before the recent Spartanburg meeting of the Southern Textile Association.

†Superintendent, Arcade Cotton Mills, Rock Hill, S. C., and Chairman of the Committee on Weaving.

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99 Beekman Street, NEW YORK

The overseer who learns to teach his help is going to be the big mill man of tomorrow. You may be an expert and yet not know how to teach other people. Give this idea some thought and when you learn to teach other people you will know more yourself. Don't get the idea that if you train your help some one of them will take your job away from you. You will get out of your work in proportion to what you put into it.

The loom fixer is not by any means the only one in the weave room who needs training. Oilers and clean up hands, when compressed air is used for cleaning, need training about as much as anyone else especially if oil stains are objectionable. If you have your looms oiled properly and use compressed air at over 80 pounds pressure for cleaning it is almost impossible to do much cleaning without having oil stains on your goods. Weavers are supposed to know many things they do not know and have never been told. Watch some of them who cannot get along very well and you will find there is something you can tell them and it will help quality and production.

A great many manufacturers have spent large sums of money raising the standard of their equipment which is the right thing to do. Why not, if necessary, spend some money raising the standard of efficiency of operatives? This will be necessary if we continue to progress in the future as we have in the past.

Our Merchant Marine.

(*Continued from page* 576.)

right honorable methods. They gave aid when aid was needed, and they will do so again whenever it becomes necessary.

Now you say if we give preferential treatment they will retaliate. We want them to. In the carriage of commerce between us and Great Britain we would accord to them the same treatment as they would give to us in that trade. But we would not accord to the Norwegian the same treatment when he attempted to compete with us in the trade with England in the handling of our goods, our commerce, with England. It is quite simple. You have an automobile and I have one. We both pay a state license and we have equal privileges. But when a "jitney" comes along and wants to operate under that same license, he is told he will have to pay another license, on account of his business we will tax him extra. That is all it amounts to.

Thomas Jefferson said, "If there is anything any country is bound to protect it is ship building and owning, because only in that way can you protect yourselves in commerce against the world." Yet it is up to some of us to keep on reminding men that they lost during the war some millions because of the lack of a marine. A marine is necessary to a country that lives upon the ocean and expects to do business upon the ocean.

Now this commercial treaty business is the principal reason given why we could not have preferential treatment for our own vessels. For the last year or so we have heard much about commercial treaties. What is a commercial treaty? It is a commercial convention. It may be abrogated at the pleasure of either signatory on six months' notice. We have them with practically all countries. Most of them have been abrogated, most of them abrogated in part, from time to time, some of them in whole. Countries have modified this agreement just like you and I might modify any agreement we might have for the sale of our goods. It is not any serious thing.

But unless there is a preferential treatment of some kind for American ships to enable the business to become established on the waters, the vast fleet that has been built up in this country will inevitably, as have other fleets, pass into foreign hands.

We may depend upon others to execute our will abroad, but there are a whole lot of us Americans left who think that the United States is after all, through its example as a government and through the example of its business men and its men of commerce, one of the greatest civilizing and humanizing influences in the world; and we believe that the only way in which our commerce can be carried to the far corners of the earth is by our own people, in our own way, doing business in our own way, carrying our commerce in our own vehicles, and exercising our right as free Americans to do business in the proper way in any man's country without asking anybody's permission.

Notes About Men You Know.

W. J. WALL, superintendent of Empressa de Hilados de Cultivo de Algondon Cotton Mills, Barranquella, Columbia, South America, was last month visiting relatives and friends in North Carolina. He is a native of that state and got his start in the mill business there. The mill of which he has charge is a 4,000 spindle plant but will be increased to 8,000 spindles when machinery which has been bought is installed.

JOHN W. YOPP has been elected secretary of the Georgia Manufacturers' Association, succeeding Edw. A. Kimball, resigned. Mr. Yopp was for several years associated with the Georgia Bankers' Association and assisted in publishing the Southern Banker. For the past few years he has been the owner and publisher of "Refrigeration" a magazine devoted to the cold storage and ice industry. He has also been secretary of the Georgia Ice Manufacturers' Association for the past year.

FALLS L. THOMASON, formerly connected with the J. Kirk Rowell Co., of Atlanta, has resigned his position with this company and is now representing the New York & New Jersey Lubricant Co., with district offices in Charlotte, N. C.

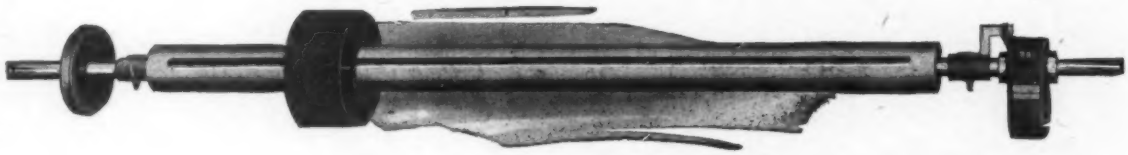
W. F. MYER has been appointed directing transmission engineer of the industrial bearings division of the Hyatt Roller Bearing Company.

EDWARD A. KIMBALL has resigned as secretary of the Georgia Manufacturers' Association, effective May 31. He has accepted the position of secretary of the Iowa Manufacturers' Association.

Dicks, David Co., Inc., manufacturers of aniline dyes, announce the removal on May 1 of their offices to 19-21 North Moore St., Borough of Manhattan, New York City.

W. D. Crumpton, Inc., special representatives of David Bridge & Co., Ltd., Manchester, England, announce the removal of their offices to Room 1010, 8-10 Bridge Street, New York City, where they will be located in the future.

Textile Grinding Machinery of All Kinds



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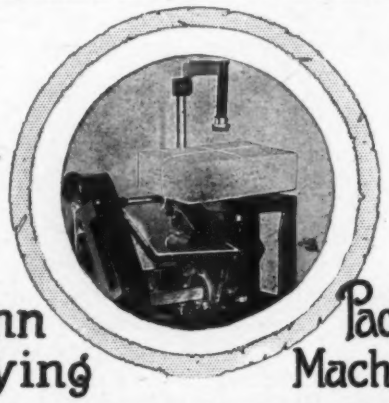

Bunn Package Tying Machine

Here's a machine that will tie whatever you may have to tie, and do it more rapidly, economically and efficiently than is possible with human labor. This is not an experiment, but a machine that has proven a success and a paying investment.

All that is necessary is to place the article or box to be tied onto the machine, and it winds the twine around it and ties a knot that cannot slip. It will also tie loose articles such as hosiery, gloves, towels, napkins, etc., and tie them as fast as the operator can handle them.

Made in two models, one winding the string in one direction only and the other in both directions. Write and tell us just what you have to tie, and we will advise what model will best fit your needs.

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Expert Service solving tying problems yours for the asking.

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Safety First and First Aid*

BY T. R. LOMBARD.†

that if you cut your finger, and it is improperly treated, "well, what has the Red Cross got to do?" "Why don't you go out of business back to pre-war conditions?" You will appreciate the fact, when I tell you that during the war the American Red Cross came to the front with twenty-nine million men, and of that twenty-nine million between eight and nine million were active workers in the field, doing something for the other fellow. Now, you know we can always imagine what a fine thing it is to do things, but, when we do a little of it ourselves, it becomes a habit, and a habit, that impresses itself so upon one, that we can't get rid of that good feeling that we have of knowing that we are doing something in this world for the other fellow. Consequently, when the war was over, our leaders said "what are we going to do?" "Are we going to scrap this eight or nine million good American citizens, who have had this taste of service, and who want to go out?" "No, we can't face the American people, and say we have scrapped them and gone back to pre-war conditions." Consequently, they said "what is the most effective thing that the Red Cross can do for the people?" and the result was a program, which embraces principally health, the health of the American people, the American Nation.

One of the points of the health problem is the one I have agreed to speak to you about to-day, that of "First Aid and Safety First." You, as manufacturers have had your experiences with accidents happening in your plants, some of them of a trivial nature, others more serious, but, if you will stop to think what it is your duty to do, I hope I will be able to impress upon you the importance of doing it. I would urge you to stop and think that every four seconds of every working day in the year someone is injured; that every four minutes of that working day someone is killed by accident. Stop and think that in this great war we have gone through, that has cost us billions of dollars (we talk in billions now; we used to talk in hundreds of thousands) in that great war there were 77,000 men killed. In the same twenty months, that those 77,000 men laid down their lives over there, 126,000 men were killed in the industrial plants of this country. There were two million people in this country during that same twenty months, who were either killed or permanently disabled by accident. Now you talk about the conservation of man-power, and that man-power is one of the vital difficulties of you manufacturers to-day. The reason for all this is ignorance or indifference, both of which are culpable, especially when the education is offered to them, the way to prevent is shown them, and I hope you will see to it, and when I have finished showing you how easily it can be done, that in every one of your plants a first aid class will be established. Before I get through I will tell you how you can do that, and approximately what it will cost you. It will cost you something, but you will find it the best investment you can make.

Ninety per cent of all infection and blood poisoning is due to small injuries. Have you ever stopped to realize

A great many people thought, after the war was over, you may lose your arm? Did you ever stop to think that if you break your leg, and you don't get the proper treatment within the first fifteen minutes, you may lose your leg, or at least become a cripple for life? It is the first fifteen minutes that count. It is the first fifteen minutes that you want to prepare for, and the reason for it is simple indeed when explained. For instance, you fall and break your leg. For the first fifteen minutes the shock leaves your muscles numbed, and, if a person, who understands it, can take your leg and put it in its proper position, put a splint around it, and wrap it up, you are ready for the doctor, and what the doctor would have done, if he had been there, has been done, and probably ninety per cent of the chances are in your favor for being restored to health in quick time with a normal leg. If, however, you are left to lie there waiting for a doctor, who may be miles away, after the first shock, the muscles commence to contract, and then the broken bone damages the flesh. Agony is yours, and worse than agony to the wounded leg, that may set up blood poison. When the doctor comes, he has to stretch those muscles to restore the bones so they may knit.

It is just as important to know what not to do as to know what to do. You know an old expedient was, if you cut your finger, to put a quid of tobacco on it, and wrap it around it. The mouth is the seat of more microbes than any other part of the body. The man, who had that tobacco, might have infected teeth, and he puts that tobacco on there, and it has infected that wound so that you might lose the arm by blood poison.

Now then, as I have told you before, ninety per cent of all infection comes from small accidents, small injuries. Blood poison may result from a scratch on the hand; it may be from a cut on the finger. Blood poison, one of the most infectious and dangerous things we have, may result when a wound is treated with anything, even water, that is not pure. It is much better, if you ever have your finger cut, or your leg cut, instead of going and washing it off at the town pump, or even at a faucet, to put no water on it, but get some iodine, and put that on it, or don't put anything on it, and wrap it up in an antiseptic cloth until it can be treated. Water carries germs.

Ignorance and superstition are the causes of the loss of two million people in a year in the negligence of the communities. I want to ask if you think it is your duty to do anything to prevent that? The state of Pennsylvania by endorsing first aid classes throughout the state has reduced its accidents 50 per cent and may reduce them still more. There are 100,000 men killed every year, and 500,000 men, who are put out of commission, so that they cannot do any more work—that's 600,000 men, who are lost to the industries of this country every year—and, if you will compute that at the rate of $500 a year, it amounts to $250,000,000. Is that worth saving, let alone the human side? Take it from the purely economic side—is it worth saving?

*Extracts from an address before the Georgia Manufacturers Association.

†Director Department of Military Relief, American Red Cross.

The Red Cross is here to help you to save that. The Red Cross is here to help you in communities to save life and to build up a better health condition in your communities, and incidentally to put down Bolshevism. Mechanical guards on your machines are good, so far as they go, but they don't go far enough. Figures show that only one-third of the results in cutting down the number of accidents was acquired through safety devices. Two-thirds of the result were secured by efficient organization and training and education in safety. It is the education of the individual, that teaches him how to think, and makes him know how to guard himself, and to take care of what he is prone to consider as not important. It is the least thing sometimes, that is the most important. One large factory handling almost every kind of labor has been able by educational propaganda to decrease accidents 60 per cent. Many of the larger manufacturers of the country are installing these classes. The Bell Telephone Company, the Bethlehem Steel Company, the Tennessee Coal, Iron & Railroad Company, H. C. Frick Coal Company, and other large companies, have their first aid classes on company time. They find it pays to do it. The insurance companies that write liability insurance, allow you a discount on your policies where you have got first aid installed. Workmen appreciate the fact that you care enough about them to look out for them, when they are hurt. The human side should appeal to all of us, but I am putting it to you from purely the economic side. I know you have got the human side at heart. I know you want to do what is right, but I want to show you how you should do it purely from a question of economy.

Accident is no respecter of persons. It may hit any one of you. You may break your leg, cut your finger, or break your arm, just as easily as the most humble employee in your works. It doesn't make any difference who it is; everyone of us is liable to an accident, and I advise that, when you put in your classes, take the instruction yourself. It only takes 15 hours to complete the course in first aid. It makes you so that if anyone was hurt and there was no doctor, you could be able to help out.

The Red Cross realizes that there is a certain amount of information, that everyone should have for the purpose of caring for themselves, and protecting themselves and their families and their employees against anything that comes into their lives with the danger of putting them out of commission. It is that information that we have compiled by the greatest scientists and the best workmen in the world, that we put at your disposal without money and without price. We are here to help you, gentlemen. Will you help us do this thing? Will you take to your hearts, as I said before, the greatest organization the world has ever known for humanitarian work?

In each one of your communities you have physicians. These physicians according to their personal bias will either charge you or volunteer the work of instruction in first aid. In Atlanta there are 37 physicians to-day conducting classes in first aid voluntarily, they realize the benefit it is to them. Now then, if you in your community find a physician, who is willing to give that information in first aid, if you will designate from your employees one or more, four or five, twenty if you like, or one hundred, to form a class in first aid, if you will notify the Director of First Aid of the Southern Division of the American Red Cross, No. 249 Ivy Street, Atlanta, Ga., we will send someone to your place. We will bring the charts, and everything that is necessary, so that your doctor can go to work, and give this information to your employees one hour a day, if you like, or one hour a week. We will arrange that entirely to suit you. You will have to do it on your time because your employees won't bother with it unless it is on your time. The employee doesn't realize its advantages. That's what it is going to cost you in the time of your employees, while taking the course, 15 hours. We will send a man there to put them through, and give them a certificate, showing that they are qualified to give first aid. Then you have got in your own plant someone, who at the moment accident occurs can be on the spot. You will have the first aid kit which the American Red Cross gets up, which has sterilized bandages, splints, and all the various antiseptics necessary, so that they can be immediately applied. You will be equipped then to conduct your plants with a minimum amount of danger from accidents because you *will* have these accidents; you can't get away from it. You never expect to be without them, but we do hope to minimize them.

Link-Belt Company, 910 South Michigan Ave., Chicago, Ill., has just issued a new 40-page catalog covering Link-Belt silent chain installations in textile mills, under the title "Link-Belt Silent Chain Drives for Textile Machinery, Book No. 425." These chains, the manufacturers say, are made by highly proficient workmen, on specialized machinery, in a modern chain-making plant. It is stated that they are as flexible as belts, positive as gears, more efficient than either, and that they guarantee efficient use of power and are positive under all conditions. All moving parts of a drive are inclosed, safeguarding workers, and the chain is protected from lint and dust.

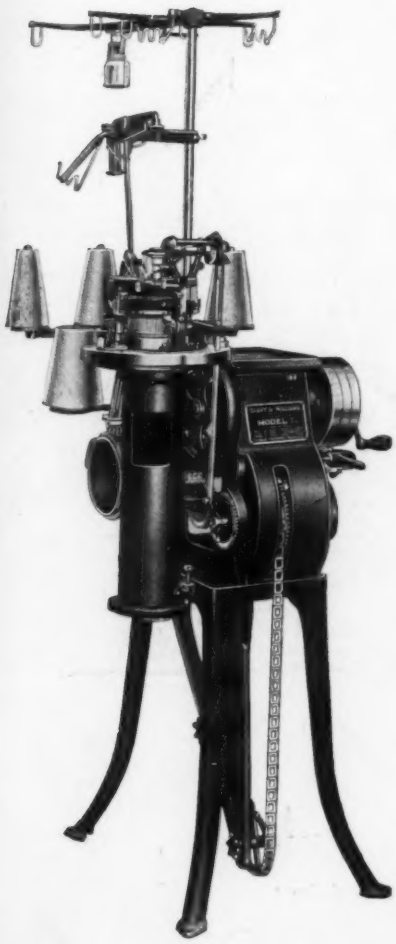
These chains are claimed to be 98.2 per cent efficient, and to permit of a convenient location of driving parts. Uniform product, greater production, conservation of space with an economy of power are said to be some of the advantages accruing to textile mills using these drives. The Link-Belt Company announces in connection with the issuance of this catalog that they will send engineers to study individual problems and needs without cost to the mill owner.

For plush and velvet finishing, Breton Minerol "F" furnishes a concentrated, oily emulsion for brushing in. The oil will not turn rancid or alter by age, it is claimed. Goods finished by its use will show the "oily sheen" so characteristic of high grade pile fabrics, the manufacturers claim. Blacks and dark colors are brightened and intensified by its use.

Georgia Webbing and Tape Company, manufacturers of spinning and twister tape, Columbus, Georgia, have gotten out a card on which is a sample of these tapes. John S. Roberts, an experienced and well known mill man, and president of the company, was distributing these at the recent meeting of the Southern Textile Association.

KNITTING SECTION

The Machine of Par Excellence For Ladies' Hose



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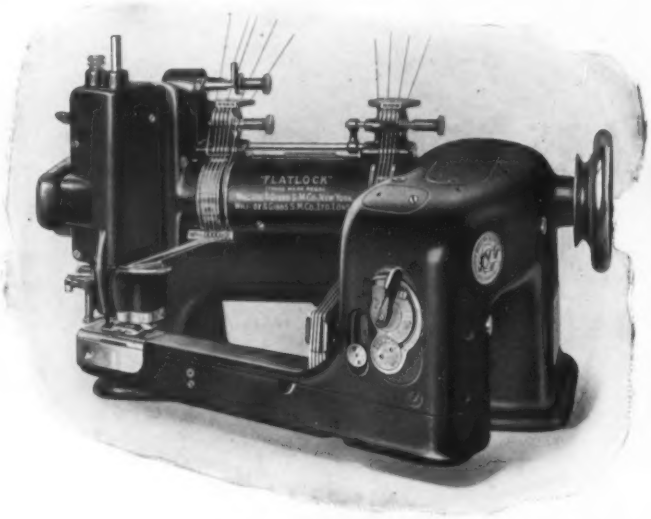

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NOT ONLY does the Flatlock machine produce far better work than the old two-operation type but it also turns out much more work.

Two Flatlock machines will do the work of three of the other kind. They occupy less floor space and require fewer operators.

In a mill of one of our customers thirty-eight Flatlocks are today doing the work which formerly required fifty-four two-operation machines. In addition to this there is of course the great advantage secured by the use of the

"FLATLOCK" seam

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This seam, recognized today as the standard for knit underwear, is a great selling power in itself. Its superior strength, the fine finish which it gives a garment, the fact that it is absolutely comfortable for the wearer, gain for it universal good will among jobbers, retailers, and consumers.

In retail stores knit garments without the Flatlock seam are fast becoming the exception. The retailer has learned that the Flatlock seam is an asset, lack of it a handicap.

Our demonstration offer is open to manufacturers not using the Flatlock seam. We will gladly send information regarding this on request.

The Seam that sells the Garment

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Annual Convention of Knitters

A large attendance, an excellent program and cooler weather combined to make the 16th annual convention of the National Association of Hosiery & Underwear Manufacturers at Philadelphia a complete success.

The business sessions of the convention proper were held this year at the Manufacturers' Club entirely away from the noise and tumult of the exhibition, thus insuring a greater attendance at these meetings and a more continued presence of the active members of the association. The meetings occupied the morning hours between breakfast and luncheon on Tuesday, Wednesday and Thursday mornings while the afternoons and evenings were devoted to the exhibition of machinery and equipment at the Commercial Museum as on the previous year.

The First Session.

was called to order at 10:30 a. m., Tuesday morning, April 27, with President Johnston in the chair. Dr. Barras pronounced the invocation and the chairman then introduced Dr. Edward James Cattell who delivered the address of welcome in the place of Mayor J. Hampton Moore, of Philadelphia. Dr. Cattell is the only honorary member of the association and was really too well known to its members to need much of an introduction. While Dr. Cattell was in his usual form he set the course of his remarks along a little higher plane than is usual with speakers delivering an address of welcome. He said in part:

"I am glad to believe that this organization is going to strike a new note at this meeting, a more hopeful note, a note that will silence the pessimists, a note that will quiet these people who run to nerves too much. We have got too many of them, people that have been busy writing the obituary notice of the United States ever since they were born and finding no publishers for it. Everywhere you go you meet these poor men who were educated beyond their intelligence and have no perspective and no memory, and therefore no faith. And now they are talking about stopping all expenditure so as to stop waste.

"A great many of these cross lots cures have been tried, but we have got to get back to the old American idea that the world does not owe us a living, we owe the world a life. We have all got to learn to play ball, and playing ball means hitting the ball and not the umpire; there is a devil of a difference. (Laughter). You will find 10,000 people on the bleachers who can tell you just where to find the ball, but put them out there in the field and see that happens. After all, our business life, our political life, our social life, is a great game of baseball.

"In our great game of life, the judges are the umpires; they make mistakes and they are faulty just like umpires, but without accepting their decisions, there can be no business done. The rules or laws must be obeyed; if they are wrong and unfair, they can be changed, but while they are there, we have got to obey them or there is no game finished to the benefit of the players and the amusement of the spectators. We have got to realize that it is a real life we are living, and we have got to keep things on the basis of what they are and not on the basis of what we would like them to be or what we think they ought to be.

"And it is the so-called extravagance and spending habits of America today, the desire to get certain comforts of life, that has put into the American people a snap and a vim and a power of self-denial in other directions that their extravagance might find expression in a different one. We do not want to kill the love of the beautiful, we do not want to destroy a desire for a certain type of luxury, in order to bring us all down to a dead level; we want to keep the door of opportunity always open.

"In this hour when there are a great many currents working against stability in government and against the orderly conduct of commercial affairs, we should bow a little to conditions and circumstances, and if we want to indulge in sport and spend money freely, let us not slap the other fellow in the face in the method of our sport or the manner of making our expenditure, but let us keep it a little more

S. D. BAUSCHER, PRESIDENT-ELECT.

under cover if we are going to do it. Let us get a grip on the fact that we have got human units to deal with.

"I said seven years ago, speaking in Chicago, that I was a little afraid of too much systematization and getting things down to such a small point that the worker would lose all interest in his job, and I called attention to the fact that in America we had to meet this problem along different lines, because any type of work which dulls the mind and kills the reasoning power of the worker has a double effect in America. That man is not only a worker but a voter, and the power to tax is the power to destroy. We have got to consider on the debit side any change in our method of manufacturing, figure what effect that change will have on the worker who, by combining his vote with that of other workers, can do that which will cost us more through adverse legislation in a year than we can gain by certain economies in ten years.

"I know of a little farm within 40 miles of where I am standing today that last year sold $580,000 worth of produce, and yet that farm was started by a man still living

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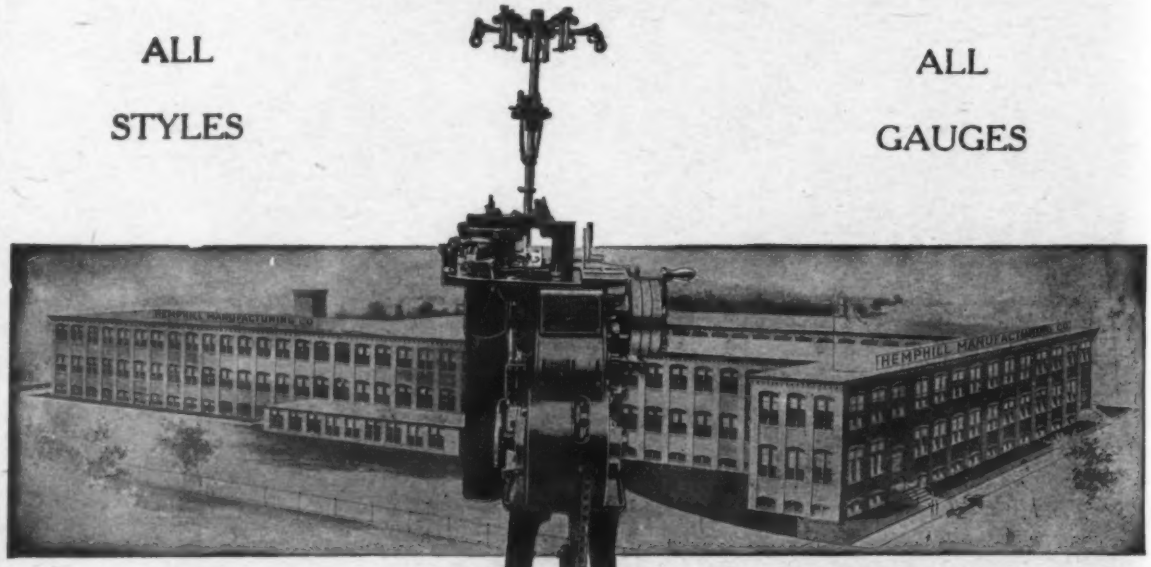

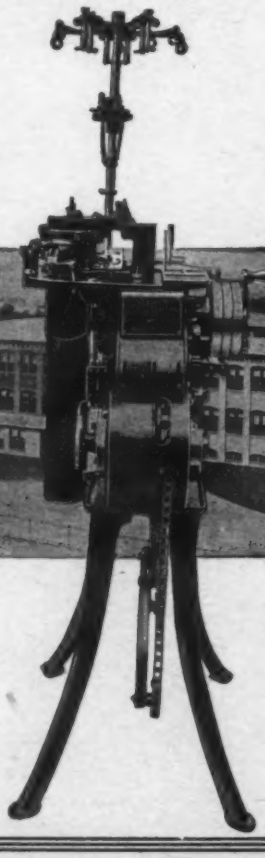

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who had been a bond-boy on a farm and who started with a capital of $600. That little farm, bought on a shoestring by a man who had everything against him, is now capitalized at a quarter of a million dollars, embraces 3000 acres of land and is today the marvel of the world. Another adjoining farm of 2000 acres worked on a scientific system, is startling the world with its products, producing $1200 from an acre of land which formerly produced only $15 to $18. We are going to simplify our methods of transportation by taking off of the railroads the burden of moving heavy freight that blocked profitable business, and putting it on the rivers and canals. We are going to take from the railroads the unprofitable short hauls and stop the system of having them back a car up to a station and charge a rate on broken car lots that makes a farmer an enemy and yet loses money for the road, and we are going to put that freight on trucks in our great new system of 'Ship by Truck,' and the railroads are going ahead with the sympathy of the people and with the recognition by the people that they must live if the country is to live, because a man is no older than his arteries, and a nation's transportation systems are its commercial arteries.

"We are meeting and solving every day new problems. The great body of our people are God-fearing, hard-working, saving people, for, with all this era of extravagance, the saving fund accounts are increasing in New Orleans and New York, in Boston and San Francisco, and the banks in Iowa which in the old days were great borrowers are asking for securities and paper to take up their surplus funds. Let us keep our courage; let us do more and more work; let us quit talking about the bad things and talk about the good.

"My friends, talking to a great body of trade unionists not long ago, I picked up a glass of water and said, 'You are a wonderful organization; combine all the organizations in America and you will get an immense power; take the legislature of America representing 110,000,000 people; they represent wonderful legislative power. Take all the legislative bodies in the world, and they represent immense power; but let all your trade unions pass an act or ruling, let all the legislatures in the world pass an act that when I drop that glass it goes up instead of going down, and when I drop that glass it goes down. There are certain things that are, from the beginning, unchangeable, and your power has its limitations, and every trouble we have ever had in America, every trouble that any individual or corporation has ever had, arose when they have been trying to buck against the ten commandments or the multiplication table. Three times two will never make nine more than once—next time you sell the man that way he pays you for six. In business, let's learn to play the game straight as well as strong.'

"So as you meet in this center and cradle of the dear old idea of liberty and government with the consent of the governed, may you not only do that which will increase your individual prosperity and the prosperity of your association, but may you here listen to what that old Liberty Bell says now, with its power of outward speech, may it whisper to your soul a new plea for liberty and loyalty and may you re-dedicate yourself on this visit to the service of mankind, and working with heart as well as head, hasten the era of peace on earth, good will toward all men. You are very, very welcome."

Response to the Address of Welcome.

At the conclusion of Dr. Cattell's remarks, President Johnston introduced Champe S. Andrews, of the Cotton States Hosiery Mills, Chattanooga, Tenn., to respond to the address of welcome declaring him to be one of the South's most gifted sons. Mr. Andrews pitched his response upon the same high plane as the preceding speaker, declaring that when men have great problems to discuss and great questions to decide, by a common impulse they meet together to take council each of the other.

"Fortunate are men at such a time," continued the speaker, "when they can meet on a spot where their forefathers before them made great decisions, and where, from the hallowed past, come memories that strengthen and sus-

RETIRING PRESIDENT T. H. JOHNSTON.

tain. I do not believe that any man can be truly selfish and truly mean it, if in his own castle there looks down from the walls the ancestor portraits of the men who lived in the day when noblese oblige made them strong, good and great, and I do not believe that any man can go into Independence Hall, gaze at the portraits of our forefathers and be altogether a mean American. There is something in environment that makes men the creatures of it, and it is the part of wisdom, when we have these problems to discuss, to come to a place that is resonant with the memories of the forefathers of the republic, like Philadelphia.

"The first duty of every man is to be a breadwinner. I have little patience with the husband who, though romantic even unto his finger tips, is unable to keep the wolf of poverty away from the door, and I have little respect for the father, who, though speaking with a multitude of tongues, is unable to teach his little son that in every dollar there are one hundred cents and that they are always as round as wheels and that they are all naturally trained to run down hill into waste and none of them is trained to run uphill into the savings bank and the thrift account.

"But man cannot live by bread alone; the industry

that stops on its efficiency and its practical side in these annual conventions has stopped short of the real reason for the existence of the industry. We must go a step further, and Mr. Cattell has stated to us fairly and squarely just exactly the basis upon which we must place our industry if it is to survive. I brought back from Porto Rico a year or two ago a wonderful tropical shrub, brilliant with every hue of the rainbow, and exhaling the odors of a thousand perfumes, and planted it in my garden, only to see it wither and die—in its strange environment it faded. Men of the knitting industry, if we are going to keep this industry of ours great and prosperous, we have got to make it true to its American environment. That is the problem today of our industry.

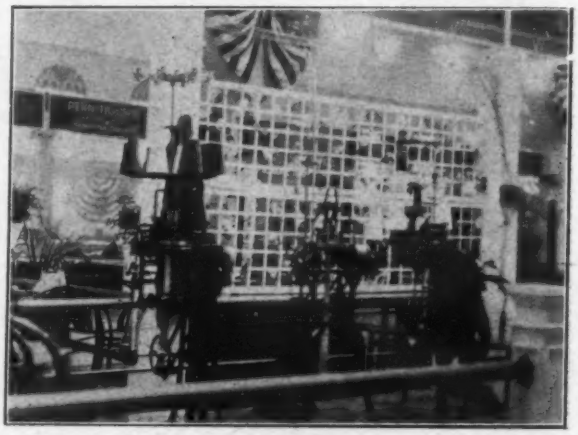
'What do I mean by American environment? I mean this, that first and foremost America is a thing of the

FLETCHER WORKS.

spirit; you cannot touch it or taste it, or feel it, or smell it; it grew out of spiritual needs, and the whole thought underlying what we call America is a spiritual thing, and we must make our industry like it. The thing that makes us different from any other nation in the world is that here we grant unto the individual the freedom to work out his life in all the fullness of which it is capable; here we permit no caste to crush him down; here we should not permit ten or twelve hours of drudgery to make of his life a treadmill; you men know what I am talking about. The big challenging problem before you captains of industry today is this, to bring back into quantity production and into the whirring of the machines of these factories something of the spirit of the old handicraft days, craftsmanship, workmanship. Can you restore it? It is gone now. You cannot restore it by your labor unions and your walking delegates; you cannot restore it by the standpat manufacturer who refuses to do anything for the men who work under him. 'Mr. Coolidge, the Governor of Massachusetts, has said that every man who builds a factory builds a temple and every man who works in it comes to worship therein, and that is the spirit in which you may solve it, but only in that spirit.

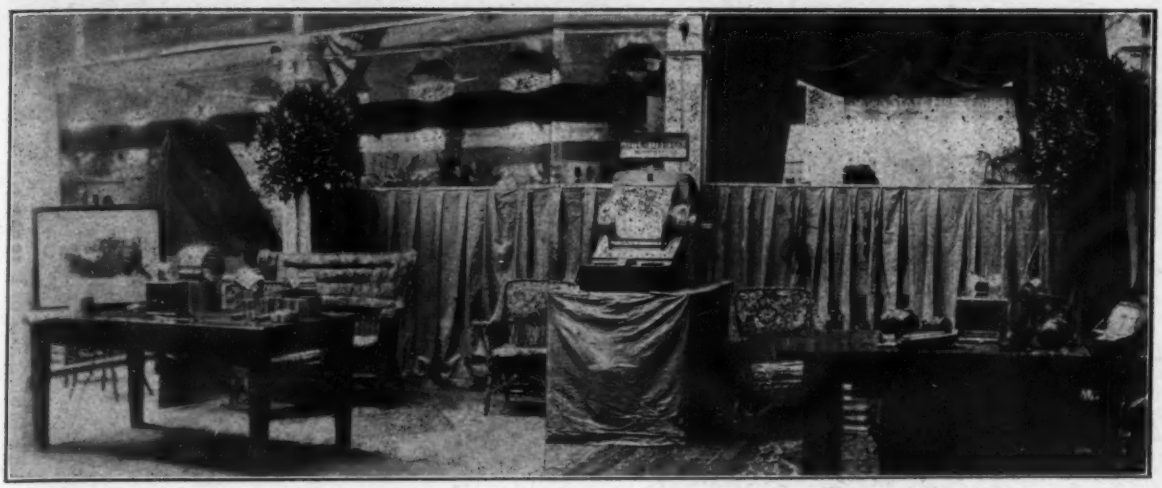
"In the old days a man saw something of the things that he produced from the beginning to the end; he did not stand for ten years doing one thing monotonously over and over and feeling at the end like he was a slave. There was in him the spirit of hope because he thought that some day he might have tools and apprentices of his own. He mixed something of the spirit of the artist and the spirit of the artisan together, and in those days they did not have labor troubles. Are we, in this industry, big enough to work out some way by which we can restore these things to American workmen? Because I say to you truly that no industry in America can survive if it violates the American spirit of bringing out the best that is in an individual, and that upon our skill in solving that question depends our skill in keeping alive the industry of which we are component parts. The American spirit is always willing to try a thing once, it is always willing to scrap the old for the new, always willing to pioneer, always willing to listen to men who can teach us, from whatever source wisdom comes, and if we do not keep that spirit alive in our industry, we will not survive.

"And finally, gentlemen, there is one other thing we have got to do if we are going to keep afloat. I said just a moment ago that every man should be a breadwinner, but every man who stops at being a breadwinner is a failure. There is hardly a man within the sound of my voice to whom the problem of breadwinning is any longer a problem. If we were workmen or knitters or loopers or foremen, that might be still a problem, but here you are the heads of your industries, all of you people, with more than you will ever need if you look alone to the breadwinning side of life. Are you going to stop and make money the God of your industry? America did not grow rich that



H. BRINTON CO.

way, men; America is not known throughout the world as being the land of industry where men work alone for the selfish rewards that it brings. Andrew Carnegie announced that no man could die rich unless he died disgraced. Here is Rockefeller spending the declining years of his life trying to work out some way by which the millions he has taken from the people can go back to their use and benefit. Here is Mr. Frick who died the other day leaving his mansion on Fifth Avenue and his park in Pittsburg worth fifty million dollars to the people. Mr. Sage's name is coupled with the Sage Foundation, and we might go on and on and repeat the names of such men in a never-ending roll, conscious of the fact that no other nation on earth has ever builded into the hearts of its business men that spirit that made them stay in the game because it is a game grander than the rewards that come to



HYATT ROLLER BEARING CO.

it. It is the unselfish side of American capital and industry that has made American industry what it is.

"The old Greeks used to spend half their time seeking out some answer to the question of life, and the older you get the more it is put and the harder it is to answer unless you have caught its spirit. Life says to you, 'Whither? whence? why?' Whither are you going? Why are you going in that direction and not in this? When do you expect to arrive? The old Greeks had their Epicurean philosophy, then they had their Stoical philosophy; then came Plato with his ideal republic, and finally Aristotle, wiser than all, who found more joy in working out those philosophies of life that gave an answer to life's eternal questions than men can ever find in any other occupation in the world, because until you make yourself straight and square with the great laws of life, you have not found the secret of happiness.

"Away back yonder, 1900 years ago, there came on earth a man who gave the answer, the most misinterpreted man that ever lived. I want to hear some day a great sermon on Christ preached by a business man. I want to see some man get up in his pulpit and get away from the doctrinal thought that Christ was only a poor carpenter's son, a sort of half dreamer and weakling who had no business ability and no ability to do anything but dream. Christ went to the wedding and found no wine. He looked on the water; the conscious water saw its Lord and blushed. When the people came to hear him in great multitudes, there was not enough to feed them. He took the few loaves and fishes and made meat enough for all, and when he saw the fishermen casting their nets and getting no fishes, he said, 'Cast your nets on the other side,' and there came out of the waters a great miraculous draught; and I cannot see anything on which we can base the life of Christ as anything else but a practical man who could have, had he wished, led in the practical things of life.

"But it was He who found a higher value and it is the doctrine of values that we in this knitting industry have got to learn, he found that after man has bought as much food as he can eat, as much shelter as will keep him dry and as much clothing as will keep him warm, mere money alone is useless and a drag instead of a help; and so he went out seeking for the eternal things of the unselfish spirit. I want to say to you, gentlemen, that if we are going to keep true to America and to our American industry, we have got to find somewhere in it men that are big enough to lead us out of the selfish spirit in which modern industry is cast and lead us on to do something for the other man. Is it asking too much in this great city of Philadelphia, where there are more endowed charities and hospitals and great institutions of learning than in any other city of the country, where we are within sight of the grand old Liberty Bell whose throat was cracked in the cause of liberty, is it too much for us in this day to dream of when men may come to spin their lives from spools on which shall be found neither the flax of selfishness nor the hemp of injustice, but only the golden fleece of fraternalism? My brothers, let us take the golden key of Philadelphia; let us enter into the spirit of brotherly love and let us work out our problems in the spirit of William Penn and of Patrick Henry and of George Washington, using the doctrine of a safe and a sane and a sound America."

As Mr. Andrews concluded he was warmly thanked by President Johnston who pointed out the fact that business is a wonderful game; a game of pleasure as well as profit. He indicated that the man who gets the most pleasure may not get all the dollars, but the man who plays the game squarely will surely reap the reward. "One of the greatest satisfactions of being your executive for the past two years," he continued, "has been in trying to bring the members more closely together that there might exist a better understanding among them and to see growing between them more mutual confidence, such confidence as begets cooperation."

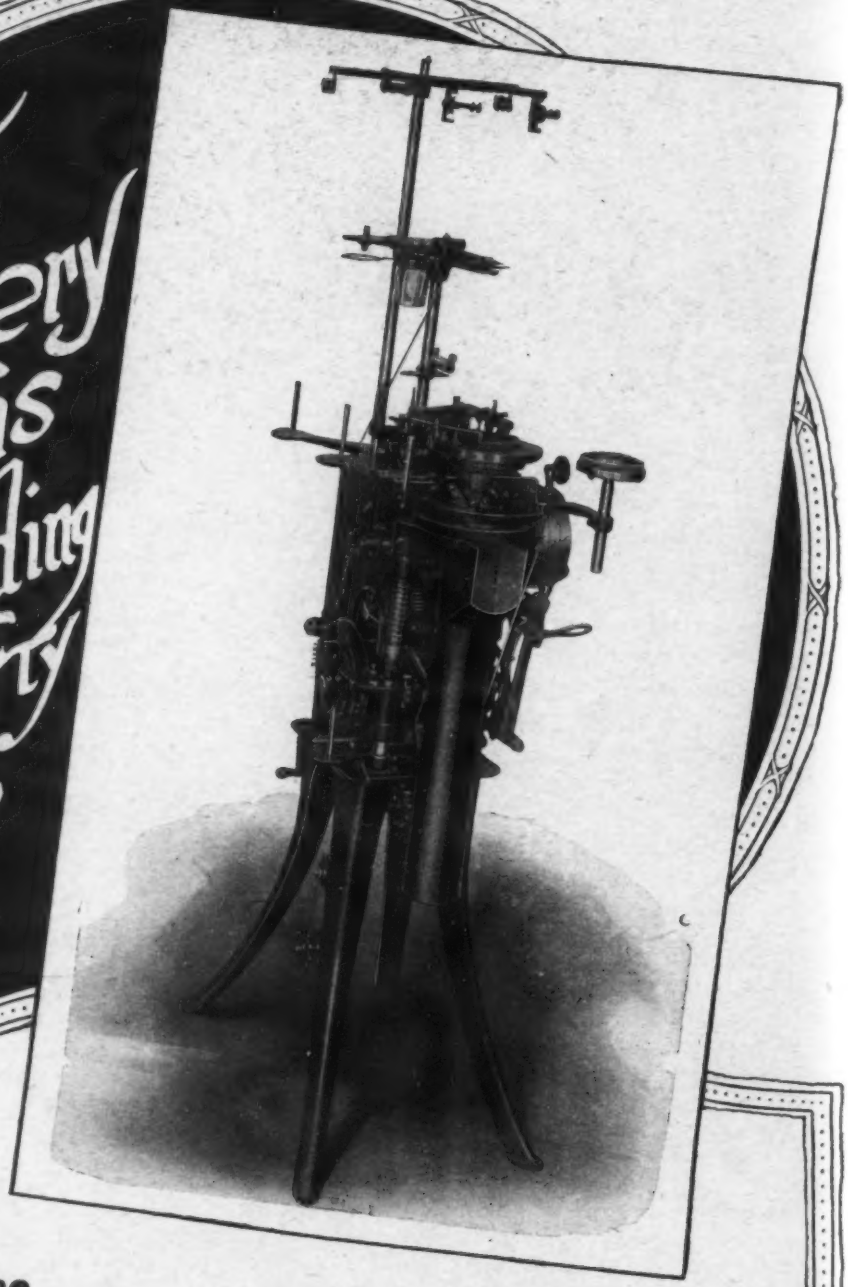
The next speaker on the program was Lincoln Cromwell, of William Iselin & Co., of New York who spoke on

Reconstruction.

He discussed this subject broadly and thoroughly saying in part:

"The evils of a great war continue after the fighting. They live on in the worst passions and shattered nerves of both victory and defeat. Our American Revolution was followed by years of such jealousies in the Thirteen States that many despaired of the new nation and would have returned to the old allegiance.

The Hosiery Buyer is Demanding QUALITY



This Superior Machine Produces the Highest Quality Fabric Free From Lines

The hosiery buyers of today are demanding the highest quality they can buy,—if you can't supply them, they'll buy somewhere else.

There are different makes of knitting machines on the market, producing good fabric, but everyone knows the advantages of the spring needle machine for knitting hosiery, especially when using silk, and everyone knows that to make the finest and smoothest fabric free from any trace of imperfections it takes a WILDMAN Spring Needle Knitter.

The product of this machine finds a ready sale and a better price for the goods.

Get into this exclusive market—supply the demand for quality goods—by installing the WILDMAN Machine.

Write today for details.

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"Relatively and actually the war has bettered the economic condition of the laboring people of the United States, but we must not forget that the figures usually published are average increases of both wage and commodity prices. There are as many wages below the average as above it, and any labor leader, any radical agitator, can find today an audience who know that they have fared worse than their employers. who are frightened by the steadily rising cost of necessities, who have never been able to buy the silk shirts and furs so much talked about, and are ready to force concessions from the public by the only means known to them.

"The President's second Industrial Conference has published a report based on the testimony of thousands of experiments in the labor problems. Every one of you should read it. The report reaches no startling conclusions as

ATLANTIC DYESTUFF CO.

to relations between employers and employees. It recommends legislation creating machinery under government auspices for the hearing of industrial disputes, but without any power in the arbitrators to enforce their findings except through the force of public opinion. The conference heard advocates of collective bargaining, of profit-sharing, of sharing with workers gains due to special enterprise, of bonuses, short hours, better housing, thrift agencies, and of giving employees a voice in the management through shop councils or other groups. It states its findings without prejudice, except for a leaning toward collective bargaining in some form. It sees no panacea for industrial unrest, no success in one place which is sure to work in any other. It says what we all know, that the enforcement of any agreement between the employer and his employees must for the present at least rest substantially upon good faith.

"I have copied this following sentence from the agreement made between one of the largest clothing manufacturers of the country and its employees, which has resulted in such improvement in their relations that they have been free from strikes since it was arranged, and while their scale of wages has enormously increased, their percentage of labor cost has decreased.

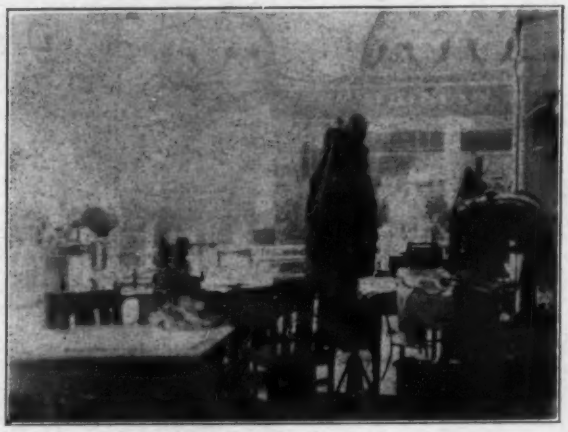
"Either an employer or his workmen can make trouble for each other unless their relations are controlled by a spirit of mutual consideration and concession and a willingness of each party to regard and serve the interests of the other for the common good.

"Justice and honor in every dealing are, as I have said before, the best assurance of a house in order, of the security of capital and the self respect of labor.

"Now it is easy enough to adopt good resolutions. For the last few years this country has been fed up on high ideals. We are still watchfully waiting for them to bring peace on earth or good will toward men. Idealism is very well in its place, but plain common sense is indispensable, and if we can be true to honor and justice in disinterested sincerity we can dispense with finer sentiments than those which grow naturally, unconscious of being fine. It is time we lost patience with some things.

"Let us think about today's high prices. They worry us all, and, quite as much as to whether they will keep up, as to how to pay them. Commodity prices increased in the five years between 1914 and 1920 just eleven times as much as they increased in the twelve preceding years. People talk wildly about profiteers, and the papers print cartoons showing human monsters called Capital who are gobbling profits while children starve and widows freeze. I believe, however, that individual scheming has had very little to do with our high prices. They are deviltry of the war which created the greatest demand ever known, consumed our surplus supplies and inflated credit. Any of these causes would have raised prices. Working together and re-acting on each other with the aid of certain taxes, they have pyramided their effect the world over.

"It is the big abuses of opportunity which discredit



NATIONAL MARKING MACHINE CO.

the whole capitalistic system and expose us to the danger of state regulation. We are soon going to hear a loud call for Federal licensing and other control of business. If that calamity befalls us, it will be due as much to some cotton yarn spinners as to anybody else. Their kind of unsocial greed wrote Schedule K into the Payne-Aldrich Bill and so discredited the Taft administration that its defeat was sure long before 1912. Heaven help the United States if that spirit has influence with the Chicago convention!

"A necessary part of our reconstruction is a rebellion against grossly excessive profits. It will occur when the public learns who are making them and refuses to pay a tribute which is unjust and dishonorable. It is just as dishonorable when capital goes into partnership with labor to raise prices and divide the spoils, as when capitalists or labor leaders play the highwayman all by themselves.

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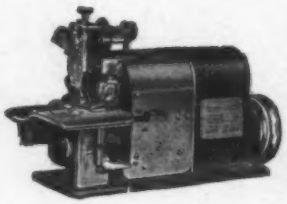

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Minimum Expense

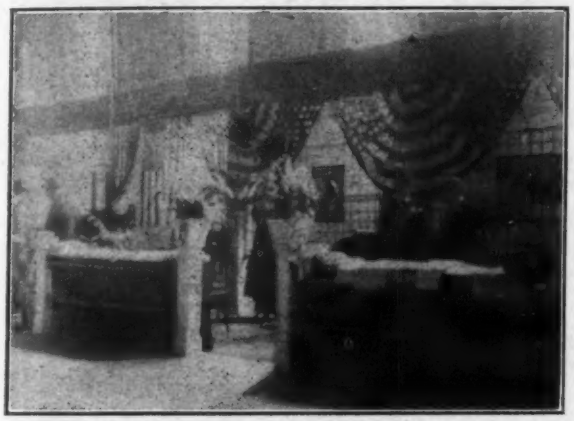
Unexcelled Quality of Work

The Merrow Machine Co.

16 Laurel St., Hartford, Conn., U. S. A.

"We are making slow progress in building up reserve stock of goods, or of raw materials. Agricultural costs are likely to increase. The world needs more cotton than is grown; more wool than is clipped. There will be no quantity of linen while Russian trade is barred. The little news coming out of Japan shows her in serious domestic trouble which may stop speculation there and lower the price of silk, but prices of the other textile materials are apparently firm. We must expect fabric prices to hold up unless they are lowered by increased production overtaking the demand, when competition will squeeze the profits of makers and distributors—or unless wages are cut. There is evidence that labor is settling down to steadier work, that production is increasing and that conditions are becoming competitive in some lines.

"Nobody expects wages to be cut. No decent citizen



ELECTRO BLEACHING GAS CO.

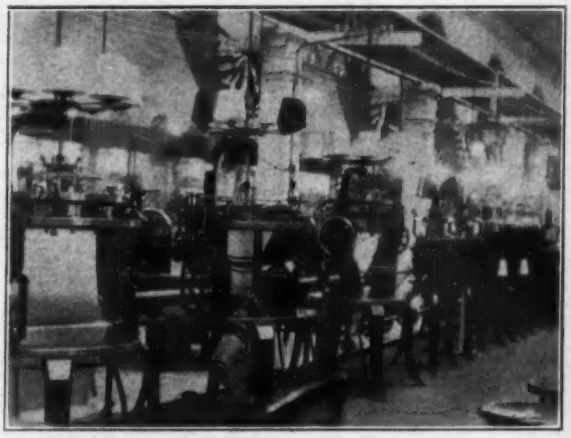
wants them cut. But unless experience fails us now, the extraordinary high prices and high interest rates mean the end of a period of industrial activity. It may not come this year. But it will come. It may bring only a temporary drop in prices, for if it comes soon the shortage of supplies will put prices up again just as it did last year. But it will surely bring unemployment. We shall then enter the critical phase of our reconstruction.

"For in that day labor, union and non-union, will protect itself with a new power and a clear idea of what it needs. It will scorn the charity of bread lines. It will demand employment. If it cannot find private employment it will demand it from the public, paid for by taxes on the rich. The heaviest burden of the working class is its constant dread of losing a job. You who are used to yearly contracts, to the running of businesses established in the patronage of hundreds of customers, who have reserves of capital and ability to turn yourselves in time of sickness or of troubles, rarely appreciate the precarious hold of the workman on an economic independence. Many employments expose him to personal dangers. If he is sick or disabled, his pay stops. If a mother stays home to care for a sick child, her pay stops. Most manufacturers get uneasy weeks before they are out of orders. But nearly every man and woman in their mills is employed only from day to day.

"The greatest injustice in life is that one man is born with ability and another without it. No form of government can make them equal, neither socialism, bolshevism nor any other ism can prevent one man from failing while another succeeds. The first colony at Plymouth started as communists, but so many wasted their time hunting instead of plowing in summer, that half of the colony died of scurvy the first winter, and in self protection they had to abandon their share-and-share-alike theory. The bees are perfect socialists, but until men are born and bred as much alike as the bees in a hive, some will always be getting rich and others staying poor. Debs, Haywood, Foster, Grunan and Howatt probably have at the hands of stupid employers suffered cruel injustices. I grant their sincerity and personal unselfishness, but their rage against capitalistic society will not convert the American people to revolutionary ideas.

"I would suggest that we study closer the conditions which unbalanced Debs and his kind, and see if we cannot learn of some things to avoid in the future. There has been a lack of honor and justice somewhere when workmen are driven to follow anarchists.

"Next to the fear of discharge, the worker's greatest dread is loss of health. Our reconstruction must take more care to ease that concern. Hundreds of factories have model hospitals in their buildings and maintain visiting nurses for the sick. Others have a doctor call every morning at the mill where he may be consulted free by any employee. I know of a factory where this practice more than pays the doctor's charge to the mill by the increased attendance of the help and the greater output, for Susie and Minnie come to work in order to see the



WILDMAN MANUFACTURING CO.

doctor, instead of staying home with their headaches, and usually find themselves all right before he arrives.

"But while employers are moving toward a more humane spirit, inspired by honor and justice, organized and unorganized labor must move in the same direction. Advocates of One Big Union, or of any attempt to take the public by the throat, must be sternly repudiated. I referred to certain price extortions and unsocial attitudes on the part of employers with which we should lose patience at once. The same applies to organized labor's effort to smear our life with the curse of internationalism. That is exactly what was attempted through the German peace treaty. It contained a chapter on Labor which had nothing to do with ending the state of war between Germany and the United States, but which pretended to further the cause of universal peace by setting up a Labor

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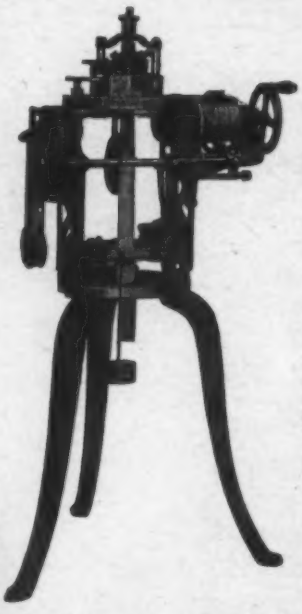

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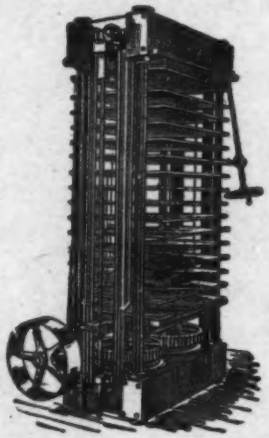

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FOR
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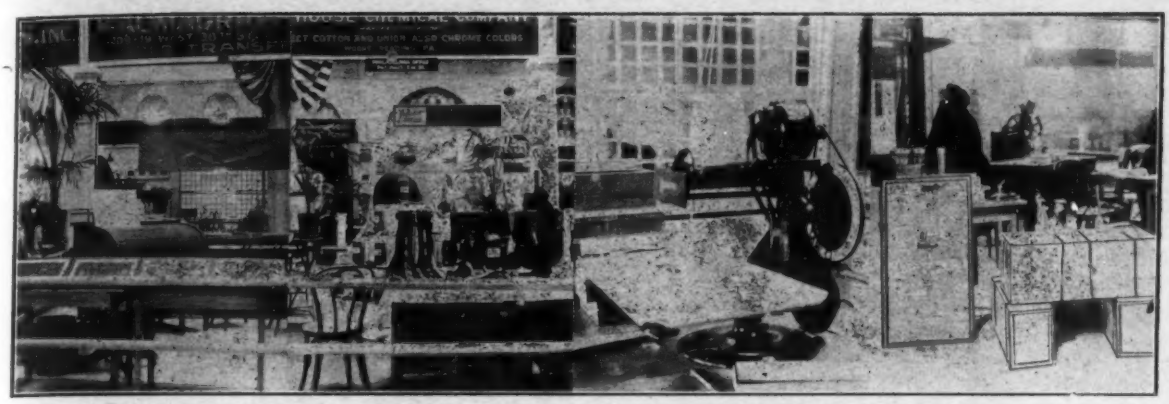


KAUMAGRAPH CO. ALTHOUSE CHEMICAL CO. NATIONAL BUNDLE TYER COMPANY. ACME STEEL GOODS CO.

Conference in Europe to discuss and also to influence and control labor problems the world over. An International Labor Office was to carry out its decisions. Each of the forty-five members of the League of Nations was to send four delegates annually to this Conference, two to be government delegates, and one each representing employer and work-people organizations.

"The International Labor Office was made a part of the League of Nations, which was to pay its expenses. This Labor Office was to collect and distribute information concerning industrial life and to make special investigations when ordered. It was to edit and publish in English, French and other languages, a periodical dealing with labor problems. This also was to be paid for out of the League treasury and assessed on the member nations. Whether this periodical was to be distributed free, to whom, and in what numbers, was not stated. The United States Department of Labor was authorized to communicate directly with the Labor Office, that is without control of Congress or the Department of State.

"Proposals of the Labor Conference were to be adopted by a two-thirds vote of the delegates present. If mere numbers and not influence controlled its decisions, the great industrial nations like England, France and the United States could never prevent a vote against them if the small member nations were united in opposition, and an intrigue for votes was certain if any of the leaders were opposed to the United States. Member state governments pledged their full influence at home to have all Labor Conference recommendations embodied in their laws. The Labor Office was empowered to send commissions to any country to watch the enforcement of these laws and to report back any failure to carry them out, and elaborate provision was made to bring a defaulting member nation to account before the High Court of the League of Nations and to have the League enforce a judgment by international boycott, if necessary.

"In this brief summary of the labor chapter of the German Peace Treaty I have tried to use only the official language. If you have any doubt of my statement that this part of the treaty was intended to put our labor problems and the most delicate questions of American affairs under the complete influence of internationalism, please ask your Congressman for a copy of the peace treaty, Senate document No. 49, and study pages 175 to 185. It is dishonest to say that this International Labor Conference and International Labor Office were to have no power. They were to have more power to make trouble in the United States than anything in Article X of the League of Nations, for they would have spewed over us a printed and spoken propaganda of every radical labor proposal which this European conference adopted. Everybody knows what proposals the Bolshevist delegates would make, and their methods to gain control of the Conference and then, at our expense, they were free to attack the patriotism of American workmen. No wonder that Mr. Lansing said the American people would reject the treaty if they found out what it contained.

"As this labor chapter of the treaty was loaded with political dynamite the senate seemed to come to a gentlemen's agreement to kill it in profound silence. It was covered by the reservation that in any matter concerning the United States no money should be spent, nor any person appointed by the League of Nations, without the consent of Congress. My lasting thanks to the Senate for that reservation. If any issue before us has greater moral weight than the settlement of our labor problems, it surely is the issue between Americanism and Internationalism—between those who see in the nation the embodiment of their ideals of home, of law, and of religion, and the best agent to secure them the blessings of life, liberty and the pursuit of happiness; and, on the other hand, those who, while accepting all the advantages of our citizenship, repudiate its obligations and believe the rest of us narrow of mind and small of soul who prefer to judge American problems by American standards and to settle them here without let or hindrance of any other people. Washington lived to weld the thirteen colonies into a nation. Lincoln died to preserve the idea of a nation, one and inseparable. International meddling in our labor troubles must be no part of our reconstruction."

Mr. Cromwell was followed by H. P. Willis of the Federal Reserve Bank who discussed "The Problem of Distribution of Credit in the United States and the Control of Its Use." Then came

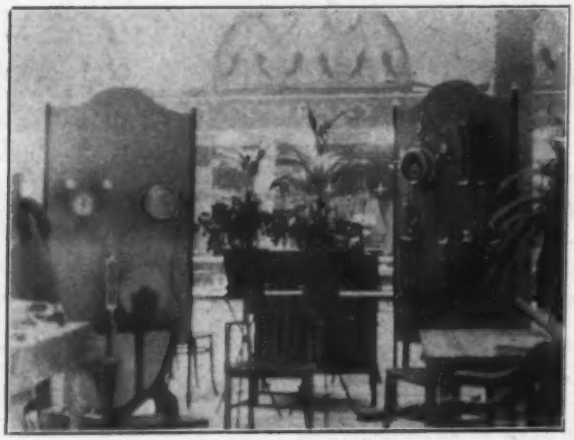
The President's Address

"About one year ago it was my privilege and pleasure, as the President of your Association, to speak before the Southern Wholesale Dry Goods Association, in their annual convention in Louisville, Kentucky. When at that time I said, 'We are naturally very bullish as to the trend of prices for the coming year, and advise our Americn

mills to buy against a full year's consumption,' I was criticized in a friendly spirit for giving vent to an excess of enthusiasm.

"I am no less optimistic now than I was then. To be sure, with armies of price fixing committees and hordes of sleuths on the heels of so-called profiteers, and the patient public burdened with taxes that must be paid into our federal treasury if the present plane of extravagance is to prevail, and this patriotic public, its patience well nigh exhausted crying for relief in prices that cannot be paid out of shrunken incomes—in these circumstances I would not, even though I believed I were correct in my premises, prophesy that prices will be higher. Let us hope it will be possible to produce more and sell for less, but production first must catch up with demand.

"Speaking of waste—extravagance in its worst form—



C. J. TAGLIABUE MFG. CO.

as a factor in the high cost of living, to say nothing of loss of production, let us assume that during the steel strike, the strikes of coal miners and the recent railroad strike a total of 300,000 men were idle one week and that their wage per week was only thirty dollars per man, and we have a loss of nine millions of dollars in earnings. This leaves out of consideration probably as many more thousands who were idle because factories in which they were employed were not able to obtain shipments of materials. I am told that steel rails for completing the new elevated railway in this city are not obtainable; that for another year or two the city will have to continue paying interest on millions of dollars of capital invested in the structure work, with not a penny of income, from the line. And all the while Philadelphia suffering from lack of railway facilities for carrying her industrious people daily between their homes and places of employment. Strikes—waste—played a very large part in your rail shortage. Prices cannot come down while this form of waste and diminished production continue.

"Neither can prices be brought down by such regulation as has been attempted. But there can and ought to be enacted legislation for removing the prime causes of high prices and their sequence, unrest; that feeling, nourished by aliens within our borders, that culminated in several nation-wide movements which doubtless would have involved us in a revolution but for the poise and common sense of the American people, who always may be depended on for a sane solution of their problems as a nation in time of peace no less than when suddenly called to arms to halt an advancing foe and crush an oppressor.

"Much has been said and written of the mistake of continuing to levy a tax on excess profits. Excess profits will disappear with the repeal of the law under which it has been necessary to provide for more than normal profits. It is human nature, when profits are to be taxed, to strive toward profits so great that after the tax has been taken therefrom there still will remain a profit. This form of taxation has operated to curb factory expansion for increasing production or producing at lower cost. Permit me to urge that this convention record its disapproval of the excess profits tax feature of the internal revenue law and demand the substitution of a direct tax on sales, if necessary, for more equitably distributing the burden, a legacy of the war which we won for all mankind. We must pay an unusual tax, whether we like it or not, for the war left the nation with a debt of $26,000,000,000 and an annual tax burden of $6,000,000,000.

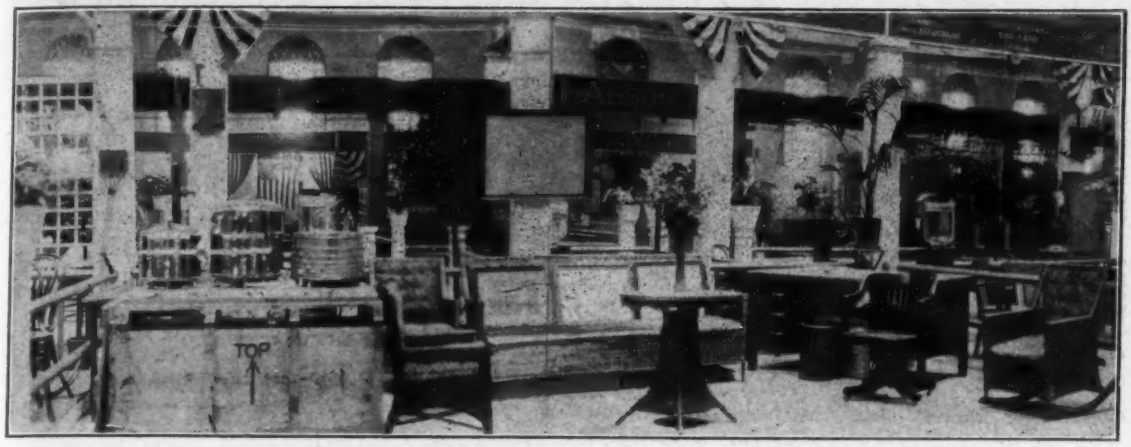
"Let us safeguard our industries as we would our homes, not in the sense of setting up a monopoly, but that the American factory may thrive and prosper and American labor receive a wage commensurate with American skill and genius and for enabling our great armies of toilers to live on a truly American plane. Customs duties have served through many years to foster infant industries and protect those that could bid defiance to all forms of competition excepting that which has as its sole depend-

BRADLEY STENCIL MACHINE CO.

ence underpaid labor. I would ask for only an adequate protective tariff, for stimulating home ambition and dispelling the fear for destruction by an invasion of the product of cheap labor. I would ask for a tariff schedule not for any class, but for the good of all the people.

"I think we all agree that sufficient tariff duties can be provided for protecting the American dye industry, as the American tinplate industry was protected and built up in the closing decade of the Nineteenth Century. Let us demand the 'open shop' in the purchase of the dyes we need with the same force that impels us to consistently and conscientiously insist on the 'open shop' in industry.

"Extended adaptation of the Golden Rule in business—among men of business and between employers and employees—cannot be too strongly urged. The Golden Rule



PERMUTIT CO.

is the rule in a number of factories, and is 'working both ways,' helpful alike to employer and employee. I have watched the results from its adoption, and am so impressed with what has been accomplished that I would invite your attention to the announcement that in this auditorium on Thursday forenoon we are to have an address by Napoleon Hill, of Chicago, perhaps the foremost exponent of the Golden Rule in industry. If the idea of the Golden Rule shall be firmly implanted, the paid proponent of the 'closed shop' will need find work for his hands, for he will have no market for manufactured sentiment.

"I believe in organization and I believe that constructive and cooperative organization of labor would go a long way toward a more complete understanding between American employees and American employers. But organized labor must not be dominated or led by any but American citizens whose zeal for national welfare transcends fealty to an organization of any one element of society. With an 'open shop' for all other divisions of our social structure there cannot in fairness be a 'closed shop' for the labor organization.

"The 'open shop' is demanded in resolutions adopted by the Kentucky Manufacturers' Association, about twenty civic, commercial and other associations of Louisville, Kentucky, and by many other organizations having the welfare of the general public in mind. I believe this convention will make no mistake if it says in forceful language and let its attitude be known to the public that the National Association of Hosiery and Underwear Manufacturers is opposed to the 'closed shop' and any international organization, whether of labor or other class of American society.

"It may not be amiss to take note of activity elsewhere for restoring commercial relations with Russia, and not let it be said that the United States was the last to re-enter that great mart where there exists a demand for our manufactured products, in exchange for which we would take platinum, hides, bristles and other products of Russia of which we stand in need at this time.

"As I have said, I am no less optimistic than a year ago. We have had but a taste of prosperity. The full meal is to come, and I believe it is about ready to be served.

"Six hundred millions of dollars is the minimum that the railroads, crippled by the operations of inexperienced helmsmen who were put in control when the roads were taken from the owners for war purposes, will spend for rebuilding, expansion, equipment and repairs.

"There are not enough homes for housing the increasing urban population, nor are there enough factories for producing all that will be required as we extend our foreign markets and satisfy domestic demand.

"There remains to be built a merchant marine—a fleet of ships sailing under the American Flag, for carrying out our products into the markets of the world and bringing to American ports the products of other countries in exchange.

"There is so much to be done that it would seem we will be busy for the next ten to twenty years. But it will be done, and done right. Old Man Hard Times will not have a lodging place, even among those who even now are looking through glasses on which they permitted to be painted for their deception a picture of industrial and financial calamity.

"Would that there were more far-seeing and conservative bodies such as we have in the Federal Reserve Board, whose wise curbing of speculation for the preserving of credit was heralded by the friend of Old Man Hard Times as the advance agent of depression. That action of the Reserve Board no doubt did cause distributors to halt in committing themselves for further obligations, a halting that was felt in industry. But what was not bought during this halting is like the water that has not run over the dam—it is in reserve for turning the mill and that reserve is going to be drawn upon very soon in large volume.

"I believe we have seen the zenith of our post-war troubles and that each day we are getting farther away from the nadir of depression. Economic conditions are fast righting themselves. Time is a wonderful healer."

Wednesday Morning Session.

At the opening of the session Wednesday morning, President Johnston announced that he was going to reverse the program. He then introduced Allen Walker, of the Guaranty Trust Co., New York, who spoke on.

"Why Production?"

saying in part:

"A great many thoughtful men lately have been giving their minds to the solution of the great economic problems with which we have been brought face to face, and in the last analysis there is but one common verdict—increased

production. Every wage earner, every housewife, every home builder is crying out against the abnormally high prices for the necessities of the breakfast table. The manufacturer and the producer of raw materials seek momentary facilities for necessary expansion and find their operations restricted because of tight money, which means limited financal resources everywhere. There is but one answer—increased production. We are asked to find the means of extending credits to Europe in order that lives may be saved and the wheels of industry kept going. The same answer always—increased production. Under-production is not limited to a local or even a national malady. It is a worldwide condition at this moment; everywhere the demand exceeds the supply. World consumption has increased to the most amazing degree during the past few years. There is little fear of our catching up quickly or

LINK-BELT CO.

of reaching any market where the supply may exceed the demand, especially in this country.

"We cannot find money to help reconstruct the world and simultaneously spend our earnings in luxuries which are beyond the means of the prudent and thrifty. We cannot listen to the demand for six-hour days and five-day weeks and still hope to produce the materials for our own needs, let alone what the world requires of us.

"What the country needs as much as anything else is an invasion of common sense. Buying what you do not need is a pretty short and sure road to needing what you do not buy. A condition of half strike, half producing, all consuming, cannot endure. Five minutes of restraint from purchasing what you can do without at this time is worth ten years of cussing the profiteer. It has been said that there has been much gnashing of teeth over our reconstruction problems, but by no means all wisdom teeth. During the war universally we were inspired to put every ounce of energy into the raising of men, money and materials and into organizing the nation to go out and destroy militant life. Now we are called upon to produce in order that we may lend money and send the products of every man's brains and arms to save life and preserve civilization.

"It is well in these critical days to remember that the world has existed for millions of years and that it will continue to exist for many more millions of years. Mankind somehow has always managed to survive every human and natural cataclysm and has multiplied and progressed, although civilizations have risen and declined, and there have been many dark ages intervening. Let us not overlook the fact that the first law of nature is self-preservation. Man has lived and he will continue to live and to better his condition as long as this little old planet revolves about the sun. Civilization will not perish. It will not only survive the destructive forces of radicalism and reaction, but will proceed to achieve its manifest destiny.

"Primarily, employers everywhere should earnestly seek to do away with the cause of the legitimate grievances of employees. Those who cannot distinguish between the legitimate and the fallacious grievance can be assisted in their diagnosis, but it must be made increasingly clear to all concerned that the interests of none are permanently served by the curtailment of production or by any interference with the machinery which moves for the maintenance of the national prosperity. If we can bring about a common recognition of these considerations, we shall not need to feel the menace of any minority class whose selfish intentions threaten the national welfare. No organization of any kind should be permitted to develop, nor even to exist, which in political power or influence may be bigger than the government of the United States. There is need of understanding that there is no such thing as a Labor and Capital problem—one distinct from the other. It is a Production problem, in which we are all vitally and equally concerned.

"It is essential that public sentiment shall be de-

DIAMOND STATE FIBRE CO.

veloped to the point where Government action at all times shall be based on the policy that what is good for business is without question good for the country at large. In the past, any proposal looking for the betterment of American business unfortunately has often been interpreted as one which was probably bad for the welfare of the people as a whole. Unless we can remould this situation, the way of American industry in the critical days ahead will be made seriously difficult and the whole economic fabric of the country will be seriously affected. Government policy affects transportation, corporation taxes, tariffs, and, in fact, it directly affects almost every kind of corporation activity, and these things all have a very close connection with our future national production.

KALI MANUFACTURING COMPANY. WESTINGHOUSE LAMP CO. ECONOMY BALER CO.

"Let us strive toward the time when broader attitudes of mind shall make necessary fairer laws; when human conduct, man to man, brings about a sweeter understanding of our true relations to one another; when we join hands as the arbiters of our own destiny and refuse to be part of the driven herd of circumstance.

"I do not like to bid business men today to 'get back to' anything. But we must revert somewhat to a renewal of the old pioneer spirit of human helpfulness if we are to relieve ourselves of the heavy pressure of the complex forces of massed humanity which we everyone feel today. We must hark back to the spirit of those days when men shouldered their full burdens as citizens—when they refused to say they had not the time to give to matters outside of their own particular business concerns, when men recognized other responsibilities than those involved in individual money making—if we are to see this country ten and twenty years hence a fit place for our children and our children's children to live in. These are the things we must give heed to if we wish to see America the kind of country we all want America to be."

The next speaker on the program was William B. Colver, of the Federal Trade Commission, who spoke on

Labeling Knit Goods.

Mr. Colver discussed his subject very thoroughly and was given careful attention by his hearers. Following are extracts from his address:

"The Federal Trade Commission is operating, insofar now as their contact with business such as yours is concerned, in the administration of a very simple and a very clear declaration of law. The law creating the Commission says 'Unfair practices in competition in commerce are hereby declared unlawful,' and that is all there is to the law. That is a declaration which cannot be offensive and cannot be objectionable to American business. That is a constitution, a declaration of independence and a bill of rights of American business.

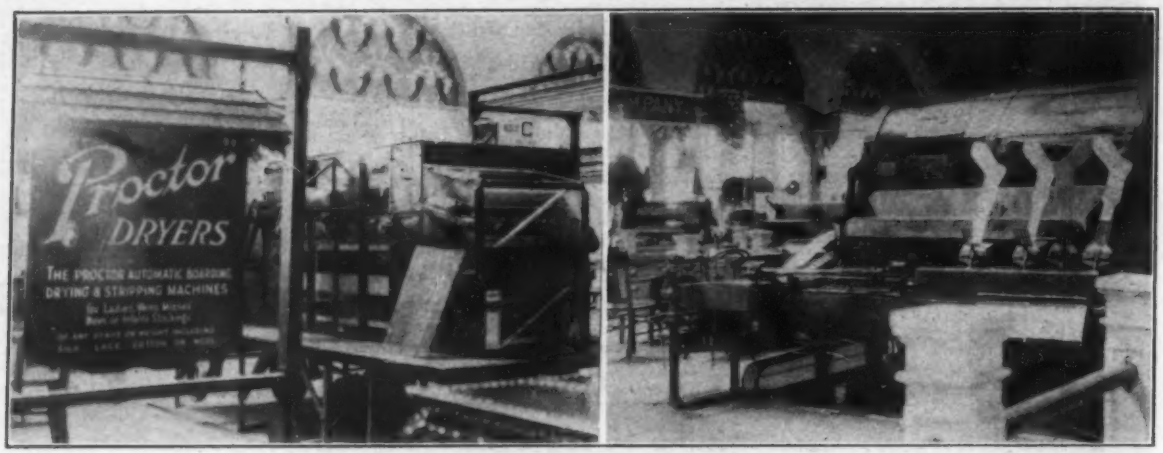
"As to labeling your knit goods—there came complaints from competitors, there came complaints from the consuming public and there came complaints from wholesale and retail merchants not against knit goods alone, but the whole subject of labeling of representation of goods, has become more and more a sore spot as people have had to pay more for their goods. As these prices have gone up by reason of the operation of war conditions and other conditions, the buying public has gotten sore on general principles, and the buying public is you and I and all the rest of us, everybody.

"The Federal Trade Commission will not attempt and will not assume, unless you say so, to tell you how to label your goods. The Federal Trade Commission, insofar as it represents the public and business, is not concerned in the labeling of the goods unless the labeling of the goods hurts somebody in the industry or in the body of the public of which the industry is an equal part.

"The Hosiery Industry were invited to state in writing, and then later to be present at a trade practice submittal. 925 letters were sent out; 25 replies were received, and on the day that we asked the industry to confer on the subject, 4 members of the industry were present and one other was represented by an attorney. We did not look on that as a very successful trade practice submittal; and it is the only time that it ever worked out that way. We have had hundreds in attendance at other trade practice submittals.

"There is some fear that in your own particular case a change of labeling would put you at a disadvantage as against the imported goods. I cannot see that. I cannot see why any rules of fair labeling and proper labeling which you may declare in your opinion to be fair to yourselves, to your competitors, to your customers and to the consuming public, should not be applied and must be applied by the Commission to the importers' agents and to his goods as soon as they reach the channel of interstate commerce. Of course it cannot be applied at the custom house, and of course it cannot be applied in the country of origin, but as soon as the goods leave the custom house and enter the channel of interstate commerce, they are certainly just as much amenable to the rules of business conduct as domestic made goods; there cannot be any question about that.

"So, then, if I have gotten the message to you at all,



PROCTOR & SCHWARTZ, INC.

I hope that at a future time instead of making it necessary to go on and meet the complaints as they are filed with the Commission one by one, and decide one complaint on its own peculiar little set of facts, and another on its little set of facts, I think it would be much more helpful to your industry, if you would help yourselves clean house if the house needs cleaning, and if it does not, get a bill of health. Take another go at this trade practice submittal. Take another go at the thing through a representative committee, through the officers of your association or in some other way, and do the job all at once, because the law is there and the law says that if a complaint is made it must be examined, and if the practice complained against seems to be unfair and the public seems to be affected, then the complaint must issue."

The next address was by Ernest C. Hall, president of the Jobbers Association of Knit Goods Buyers who appeared as the spokesman of the National Wholesale Dry Goods Association. Mr. Hall opened his remarks with a quotation from the constitution of the dry goods association, saying, "The objects of the association are to bring about more harmonious relations between the wholesalers themselves and also between the wholesalers and the manufacturers with whom they deal." In discussing this question of

Harmonious Relations

Mr. Hall continued in part:

"In the first place, it would seem as if the time had arrived when a contract between a buyer and seller should be a real contract, instead of merely a memorandum which stipulates that the seller will ship the goods ordered if it is profitable and convenient for him to do so, and if not that he will notify the buyer later on that the seller's part of the contract cannot be fulfilled. The same memorandum stipulates that, irrespective of the fulfillment of the seller's portion, the part of the contract relating to the acceptance of merchandise by the buyer should be adhered to.

"It is generally known by all concerned that this kind of a so-called contract has no legal standing whatever, and can be broken at will by either party. It would therefore seem that the Manufacturers' Association and Buyers' Organization should be able to agree on some simple form of contract which would be equitable to both parties.

"Another thing that a great many jobbers object to is the constant shortening of terms by manufacturers. This has worked a great hardship financially on jobbers that are situated at any great distance from the mills, as in many instances they have to pay for their goods long before they get them.

"Another condition that has done a great deal of harm to the business during the past few months is the fact that manufacturers have accepted bona fide orders and have shipped samples to the jobbers, who in turn have sent them on the road and sold, only to receive notice from the manufacturer from six to eight weeks afterward that they will be able to fill only 50 to 75 per cent of the order. The jobber, after going to the expense of selling these goods, has to go to the additional expense of going to all of his customers and endeavoring to explain to them why they will not get the goods which they had ordered from him in good faith, and on which they had lost the opportunity to purchase from other sources.

"Another abuse that is brought to your attention is the practice of many manufacturers accepting an order without reservation, and then six or eight months later, when the goods are shipped, filling same without regard to the specifications given when the order was placed. For instance, say a buyer places an order with a manufacturer for a reasonable amount of merchandise for future delivery, calling for packing in black boxes, with the jobbers' bands and labels; he very often receives these goods packed in grey or red or some other color of boxes, with any old kind of label at all, and upon making a complaint to the manufacturer, receives a letter stating that if he does not want the merchandise, to kindly return it and he will get credit for same. This, of course, is of great assistance to a jobber situated one thousand or fifteen hundred miles away from the mill, and he is therefore forced to take the goods as they are or lose his business. Usually he makes the best of a bad bargain by putting the goods in stock, and resolving in his mind that he will buy no more goods from that manufacturer.

"If the manufacturer was unable or did not wish to put up the goods in packing as specified, it would have been better to say so when he accepted the order. Many jobbers have a real grievance against manufacturers on this one subject, which is probably of a great deal more importance to the jobber than the manufacturer realizes.

"Another matter that has not given complete satisfaction to the wholesaler is the system of the allotment of a certain amount of merchandise. Theoretically this is a good idea and may have worked out to the entire satisfaction of the manufacturer, but in many instances it has been far from satisfactory to the wholesaler who distributes the goods. Where the allotment is fair and covers a reasonable amount of the mill's output and the merchants' requirements, there is not much cause for complaint, but when a mill makes an allotment of a small part of its output on November 1st at one price, another allotment on December 1st at a higher price, and a third allotment on January 1st at a still higher price, the entire quantity of the three allotments being less than 50 per cent of the mill production, there is a strong suspicion in

LEON R. WHITCOMB, CHEMICAL ENGINEER AND GENERAL REPRESENTATIVE FOR THE REFINITE CO.

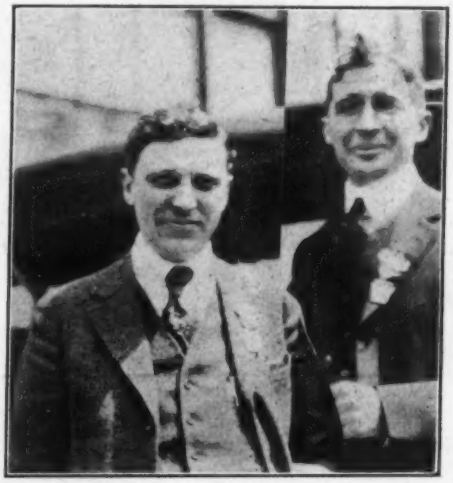
the minds of the wholesaler that the mill is taking an unfair advantage. If it were possible to return to the customary buying and selling seasons which prevailed up to two or three years ago, a large part of the trouble would be eliminated, and it would be of great advantage to the wholesaler, and in the long run to the manufacturer as well.

"In further connection with this we come to a matter which is of the greatest interest to every one here present. and that is the proper time for manufacturers to offer merchandise to the wholesaler for the Spring of 1921. The first of July would be even a better time than the first of June for the wholesaler to buy Spring goods, as before that time he should have cleaned up the goods on his shelves, or know what amount he would be carrying over. The manufacturer in turn would have cleaned up this year's business, and could make a more reasonable estimate as to his production and costs and conditions of manufacture. As far as we can find out, the jobbers are practically unanimous in this opinion."

The next speaker was T. L. Anderson of Richmond, Va., who spoke as the representative of the Southern Wholesale Drygoods Association. Mr. Anderson sketched the history of the Southern association briefly and then discussed some of the methods now in vogue among manufacturers saying in part:

"It appears that the jobber is required to shoulder the entire risk of price uncertainty, also to finance both the manufacturer and the retailer. You have eliminated practically all discounts and greatly shortened your datings, also discontinued all freight allowances, except to certain favored markets, which is unjust to the remainder of us. You require us to buy our underwear and some lines of hosiery ten months before we need it; you require us to take in our goods six to eight months before we can ship to our customers; you require us to sign iron clad contracts, with not one clause favorable to us, your datings are so short that frequently we have to pay for the merchandise before it is received. If there is an embargo on at the time you get our goods ready for shipment, we are required to lose the time the goods are held before they can be shipped although they are bought f. o. b. shipping point; this is not reasonable or just. You buy your supplies for a limited period, make up samples only, until you get the jobbers' order for the merchandise. You are afraid to buy your supplies ten months in advance, but you require the jobber to do it. When we sell our goods for future delivery, we can not get our customers to sign a contract, and we know if the market breaks, our orders will be cancelled.

"Some of you have become very careless about the inspection of your goods; we get lots of seconds for firsts;



WILL B. ANDERSON AND P. D. JOHNSON OF THE BARBER-COLEMAN CO.

your packing is very poor; frequently the boxes fall apart before we can put the goods on our counters. Frequently no one would recognize the stock as being the same as samples from which they were bought.

"I do not think there will be any precipitate break in prices, but feel sure the high water mark has been reached and there should be a gradual recession. As long as the jobber was operating on an advancing market, he prospered, notwithstanding all the unusual exactions of the manufacturer, but conditions have changed. We are now experiencing a stagnant market. The consumer has bucked; high priced silk hosiery is no longer in great demand, even mercerized hosiery at present levels is dragging. I am sure that when the jobbers dispose of their present contracts for hosiery and underwear they will hesitate long before loading up again at this level."

President Johnston then introduced Frederick Mayer who spoke on "Responsibility for Production."

At the conclusion of Mr. Mayer's address came the report of the committee on resolutions. This was followed by the report of the nominating committee when the following officers were duly elected for the ensuing year:

President, S. D. Bausher, Glorie Underwear Mill, Reading, Pa.

First Vice-President, D. L. Galbraith, American Textiles, Inc., Bay City, Mich.

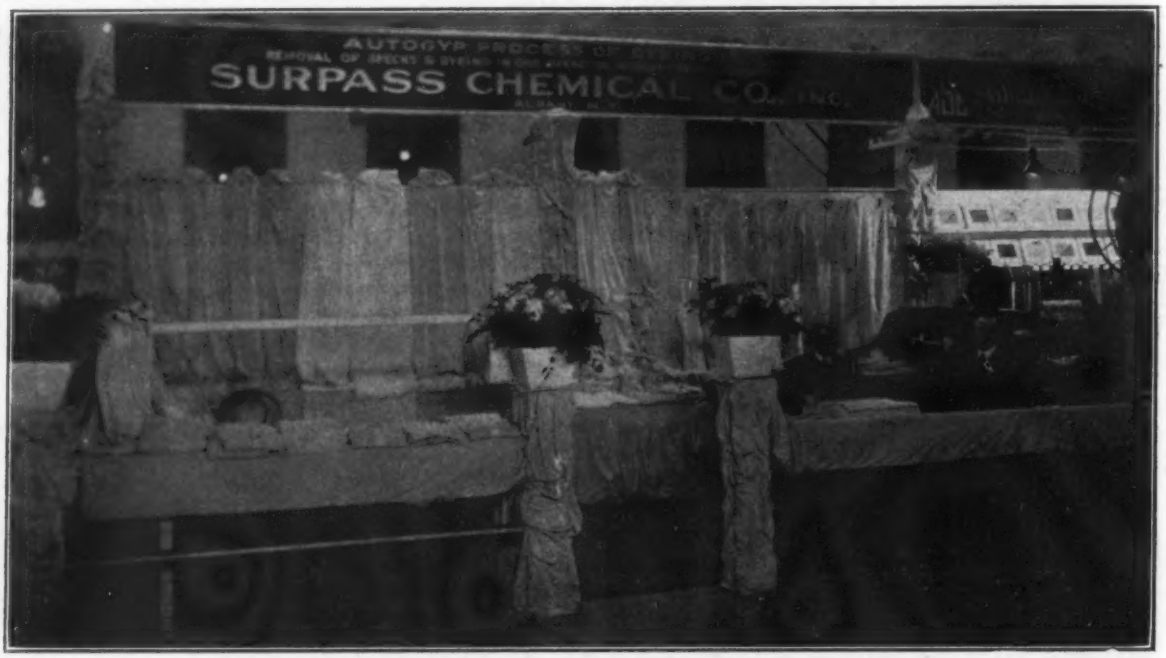
Second Vice-President, Champe S. Andrews, Cotton States Hosiery Mills, Chattanooga, Tenn.

Board of directors for two years: W. Park Moore, Hancock Knitting Mills, Philadelphia, Pa.; Jos. H. Zens, Milwaukee Hosiery Co., Milwaukee, Wis.; G. Oberlaender, Berkshire Knitting Mills, Reading, Pa.; W. H. McLellan, Alden Mills, New Orleans, La.

and by the use of thoroughly modern methods, are made even lighter at the center, for the use of machinery, than was the case of the narrow mills which were formerly used.

"In the construction of mills for the manufacture of full-fashioned hosiery modern methods make it possible to construct these mills of sufficient width to take a double row of machines, which require an over-all width of eighty-five to ninety feet, and also make it possible to consider the placing of full-fashioned hosiery machinery on the fifth, sixth or seventh floors, as the occasion may require, without particular regard for the question of vibration.

"There is nothing particularly complicated about the arrangement of departments in a knitting mill, and, given a complete new plant to consider, it becomes a very simple matter to arrange departments properly.



SURPASS CHEMICAL COMPANY, INC.

Treasurer: Robert C. Blood, John Blood & Co., Philadelphia, Pa.

Secretary: C. B. Carter.

Thursday Morning Session.

The first speaker at the Thursday morning session was W. H. Rose of the Chicago office of Lockwood, Greene & Co., who discussed

Concrete Construction.

for Knit Goods Plants. Following are extracts from his remarks:

"The last few years have shown a marked tendency to go to the use of reinforced concrete construction for knit goods plants. The advantages are more permanent construction, smaller maintenance charges, lower insurance rates, increased daylight, greater stiffness and rigidity, which carries with it the possibilities of placing heavy machinery and even a dye house on upper floors. There is also a marked tendency at the present time to go to the use of much wider buildings than were formerly thought possible. Modern knitting mills are constructed with widths of eighty-five, ninety and even one hundred feet,

"Most knit goods plants start manufacturing processes with the delivery of the yarn to the winding and knitting departments. In a few instances, which are, however, in the minority, knitting plants have their own yarn mills. In these cases, however, they are usually located in separate buildings and so the layout of the knitting mill in these cases becomes almost exactly the same kind of problem as when the manufacturer buys his yarn.

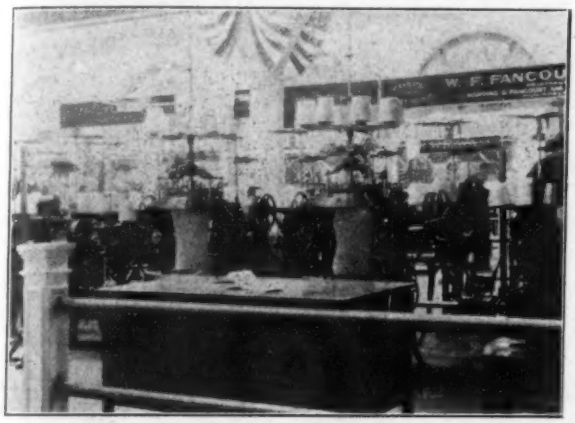
"The work of the average knitting mill leaves off when the finished goods are loaded out of the shipping room, and therefore it is easy to see that the arrangement of an ideal knitting plant would be one in which the yarn on receipt at the plant would be taken to the top floor for winding and knitting and then carried on through the subsequent processes, traveling down from floor to floor in its progress through the mill, and finally landing on the ground floor where finished goods, storage, packing and shipping could be located.

"As the work of the dye house in the knitting mill usually follows closely after the knitting processes and is followed by many finishing processes, it will be seen that

the arrangement referred to will necessarily bring the dye house to or near the top of the mill, and if the mill is properly constructed of reinforced concrete, this becomes easily possible.

"There are a few fundamental requirements for a dye house which are of the utmost importance. These can be briefly stated as good daylight, proper ventilation, good drainage and convenience of location to other departments.

"The location of a dye house in its proper place in sequence of operations, whether this be on the top floor or on next to the top floor, as the conditions may require, will eliminate much unnecessary handling of the product and will in practically all cases not only pay a large return



SCOTT & WILLIAMS, INC.

on any investment required to get this location, but will also give many other advantages."

After taking up in detail the questions of light, ventilation, drainage and drug storage, the speaker took up the subject of power and continued:

"The use of long lines of shafting is now practically obsolete for knitting mills, and in most modern hosiery and underwear mills machines are driven in small groups by motors located on either floor or ceiling. Individual motor drives are being supplied to the larger machines, and in many cases to individual dyeing machines, all apparently with entirely satisfactory results, with the possible exception of underwear knitting machinery of certain types, while we understand that better results have been found by driving in relatively small groups.

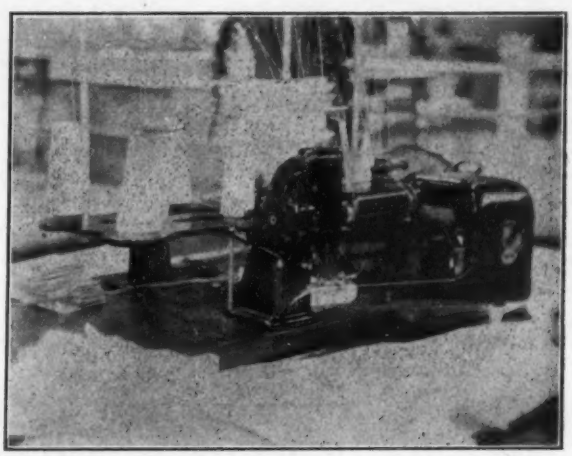
"The past few years have shown great strides by the manufacturers of lighting requirement, such as shades, lamps and reflectors, and the average knitting mill, if it has not a modern lighting system, could well afford to consider entirely going over and modernizing the lighting layouts and equipment. Indirect lighting has been used to a great extent lately in hosiery mills, and a soft uniform light obtained by this method has proven very satisfactory. There remain, however, some departments where the application of this does not seem to give the most satisfactory results, such as in boiling rooms and some special departments.

"It is hardly necessary to speak here of the very great improvements which have been made in all manufacturing plants in the way of provisions for the comfort and welfare of the employees. These take the form of lunch rooms, rest rooms, hospitals, the best toilet and wash room facilities, schools for the training of employees, etc., and while these offer no particularly difficult or technical problems for the designers of modern mills, they are features which must be kept in mind in order that proper space may be provided for these at the location where needed and where they will be conveniently located for use of the employees.

"The question is usually raised as to whether the location of dye houses in the upper story of the plant will not greatly block the provision of a suitable supply of water for this department. This may be answered by saying that if this is the case, it is necessary to provide an enclosed tank located on the roof of such a building, containing, as a rule, two storage tanks, one for hot water and one for cold.

"Concrete construction makes it comparatively simple to carry these heavy loads at the roof level. The use of ample storage tanks at this point makes it possible to use very small pumps for keeping the water supplied to them; in many cases the city or plant pressure will keep these tanks filled through a relatively small line. Also in such cases a water heater located at a lower level in or near the power house may be utilized for providing a circulating storage tank is being continually recirculated through this heater, into which all steam from the engines may be exhausted."

The next speaker on the program discussed "Trade



THE FAMOUS "FLATLOCK" MACHINE OF THE WILLCOX & GIBBS CO.

Mark Factors at Home and Abroad." In discussing this subject F. H. Williams, vice-president of the Trade Mark Title Co. had prepared a long and detailed address which was distributed in printed form by the National Association but which he did not deliver in full at the meeting.

Mr. Williams was followed by Napoleon Hill of Chicago who took for his subject "The Ladder to Success" which was based on the Golden Rule philosophy which he has developed.

The next speaker was H. S. Bartholomew of the Cooley & Marvin Company of Boston who spoke on

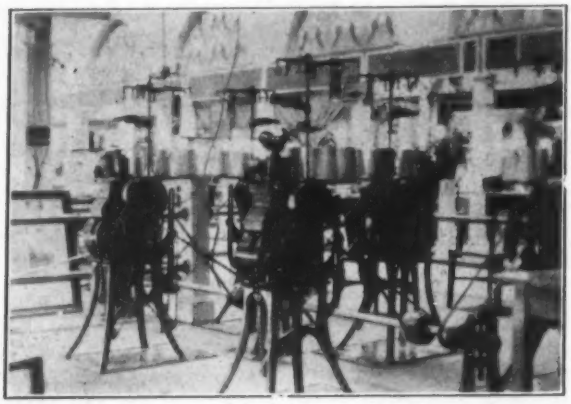
A Cost Plan for Associations

saying in part:

"The establishment of a uniform cost accounting plan throughout an industry is one of the most vital problems

confronting any group or association of manufacturers engaged in producing similar products. An association is a splendid medium for drawing the attention of its members to the importance of ascertaining accurate costs. The subject is of so much importance to both the individual manufacturer and entire industries that uniform cost accounting plans have been adopted in a large number of associations and it is rapidly becoming considered a regular phase of association work. (See article in April COTTON, page 431.)

"A cost plan for an association must be adaptable to both large and small manufacturers and to varying methods and conditions of manufacture. The plan must be of such a type that it fits in with the manufacturing conditions of a particular industry. In other words, the plan must be built to suit the methods of manufacture rather than have the methods of manufacture changed to conform



"BANNER" MACHINES OF THE HEMPHILL CO.

with the plan. The secret of developing a successful plan is to confine your methods to uniform fundamentals of cost accounting.

"A uniform cost plan also increases the efficiency of the industry as a whole. By comparing costs with each other each manufacturer can discover his own shortcomings and leaks. The spirit of former years that each manufacturer should not exchange ideas with another is rapidly being superseded by a spirit of cooperation. After installing uniform methods of figuring costs in various associations I have been surprised at the frankness with which they have talked costs of material, labor, percentages of overhead expense on similar products.

"In addition to economies in the individual plants from the use of the uniform plan, it also would be an economy to install a cost plan as an association, thus greatly decreasing the expense to the individual manufacturer. For example, it would be possible to divide your association into the three or four principal groups of knit goods manufactured, such as hosiery, underwear and sweaters. A general plan such as outlined in the foregoing could be devised for each group and the cost to each member greatly reduced.

"The greatest weakness, however, we have found has been the lack of a proper system of control for coordinating your detailed cost records with the general books of account so as to prove their accuracy. We have often found an elaborate scheme of detailed cost by which a separate cost was carefully developed for each style of hose, underwear or sweaters manufactured, but no provision made to make them a part of a general system which would prove that all materials used, direct labor employed and all expense or burden, were actually absorbed into your costs. Thus, the most important step in cost accumulation was lacking, namely, a proof of results.

"A system of cost controls should be established and the cost by styles be made a part of it.

"The object of such a system of controls is:

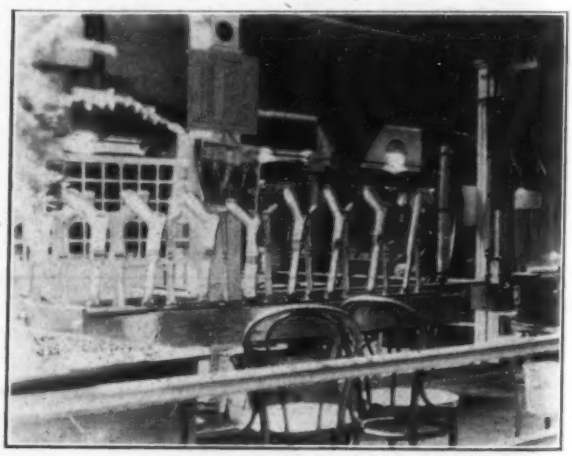
"1. To establish a proof of the detailed costs by styles in their main factors of cost.

"2. To carry a series of continuous inventory accounts of raw materials, work in process and finished stock, so that a monthly balance sheet can be obtained with due allowance for fluctuations in inventory investments.

"3. To actually apply against your sales a cost of sales which is made a part of your books of account and makes it possible to obtain a monthly loss and gain statement.

"A feature of this system is the systematic arrangement of the accounts. The accounts are first divided into three main divisions under the captions of Assets, Liabilities, Revenue and Expense.

"The major divisions are again subdivided into groups denoted by letters A, B, C, D, etc. For convenience in outlining the system, each account can be symbolized, combining the letter at the head of the column with the number opposite the horizontal line it occupies, thus A1 would



A SECTION OF THE PARAMOUNT FORM DRYING EXHIBIT.

be the symbol for Cash in Office account and likewise B2 for Cotton Yarn account.

"Under the caption of assets we have the following groups:

"A. Current—arranged in the order of availability.

"B. Inventory—including raw materials, work in process and finished product accounts.

"C. Investments—including permanent and other investments, including goodwill.

"D. Deferred—including insurance and interest on notes paid in advance.

"The second major section consists of the liability accounts grouped as follows:

"E. Current—arranged in the order of priority.

"F. Reserve—consisting of reserves for depreciation and accounts to reflect all accruing expenses.

"G. Fixed—to include any bond or mortgage accounts, should they arise.

"H. Capital—including surplus, profit and loss, dividends paid, and federal taxes.

"In the third major section is included all the operating accounts grouped in the order logically required to arrive at the net profit or loss of the business over thirty days. The captions are: J Sales, K Deductions from Sales, L Cost of Sales, M Mill Burden, N Administrative, O Selling, and P Other—Income and Charges.

"The series of accounts J through O inclusive reflect the operations pertaining directly to the business of producing hosiery. The P accounts pertain to the financing of

SIGNODE SYSTEM.

the business and are extraneous to the purpose of the actual business of manufacturing the product.

"The series of accounts J through L show the manufacturing profit, and the series of accounts J through O show the operating profit."

The last speaker of the Thursday morning session was George E. Holmes, who discussed

Industrial Relations

saying in part:

"The fundamental principles necessary for harmonious industrial relations are identical with those that make for harmony in all other human relations—whether these relations exist between man and his home, his associates at work or his community. These relations may differ in detail, but in each instance the basic principle of justice must be present.

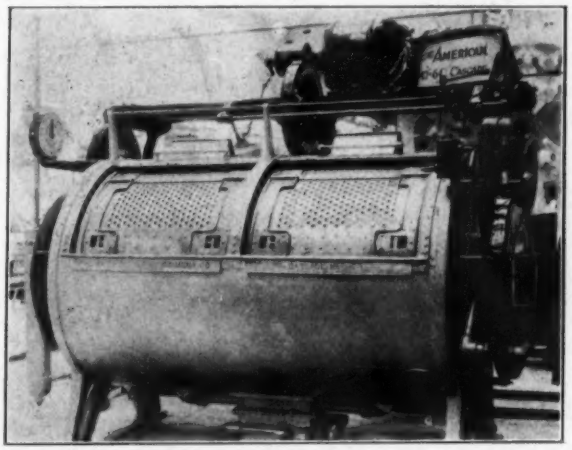
"What is meant when we speak of justice or injustice to our employees? Are we to judge every employer unjust to his employees if he has failed to bring about harmonious relations with them? Are we to say that all welfare work, bonus systems and profit-sharing plans that have been attempted and failed of their purposes have been the outcome of injustice to the employees?

"No! But unfortunately, we have measured it entirely by the motive behind the act rather than by the method of its application. We have assured ourselves that our motive was right and unselfish, and then we have gone ahead. Personally, I do not believe that the principle of justice ends with the motive. In fact, I am of the opinion that our motives can be thoroughly selfish and we can still be just.

"Justice, in the general conception of the term is synonymous with sentiment—but—justice in modern industry is not sentiment; it is the application of common sense principles for the accomplishment of the greatest good. Welfare work, bonus systems, profit-sharing plans, and all such ideas are not unjust in the motive. Their injustice exists in their application—in the lack of psychological understanding of the mind of man, and the reflex action that is bound to come from the recipient of gifts not fully understood.

"Until we have a full understanding we can have no unity of purpose, and without a unity of purpose there can be neither true efficiency nor harmony. Industry today recognizes no such common purpose between employer and employee, except in isolated cases. It is the house divided against itself that cannot stand. The employer organizes into associations to protect himself from his employee, who has likewise joined a union to protect himself from his employer. They are competitors, not cooperators—two factions with the same objective fighting for advantage.

"Frankly, I believe the employer is in the majority to blame for this condition, and that until he is willing to assume responsibility for the mental attitude to his employees we will have no peace in industry. The employee is a human being just like the rest of us—the only difference existing in the degree of intelligence. The same fundamental ideas that have goaded us on in our progress are present in his mind also—differing again only in degrees—degrees of definiteness. He wants food, shelter, clothing



THE NEW "AMERICAN CASCADE" OF THE AMERICAN LAUNDRY MACHINERY CO.

and a little beside—just as you and I. He wants recognition of his individuality, opportunity for growth, and a chance to express his individuality and realize his growth—just as you and I.

"Does this mean that because his fundamental desires are identical with ours that we are to elect him to our Board of Directors, share our profits with him and permit to manage our plant? Hardly; I do not believe he is competent to direct or manage the affairs of a plant—if he were is it logical to suppose that he would still be an employee? I do not believe he is entitled to a share in the profits—what risk has he assumed in the creation and development of the plant? But, I do believe he should be given all the opportunity for growth possible; and I do be-

lieve that he should be permitted to express himself and assume personal responsibility for his acts.

"When he is approached individually with some new idea, his instinct of self-preservation asserts itself and he becomes suspicious of the intent. In the mass he feels the security of the herd and permits his mind to relax and receive the views of others.

"It is this herd instinct that supplies courage to the mob or the army, and it is this herd instinct that we must take advantage of and properly direct for creating company interest.

"I have seen the worst agitator in a plant, working under the stimulus of this herd instinct, change in a day from a most destructive element to the most constructive one anyone could ask for, merely through proper direction of his energy into a channel for building up instead of tearing down.

"I have seen an entire department in a mill go on strike under the intimidation of an I. W. W. disturber and have seen a committee elected by the balance of the employees go out to the homes of those workers and get them to return to work by explaining to them the truth of the situation.

"I could name hundreds of other similar instances to substantiate my assertion that the employee will assume responsibility and play fair, if we will but give him the opportunity.

"There are few manufacturers today who are not considering some plan as a solution of their difficulties, but no matter what the nature of the plan is, they must at all times bear in mind that it is with what their employees may think and not what they think themselves that they have to deal.

"No one plan will fit every condition. It is true that the human element in each instance has desires of a like nature, but the proper coordination of the human element in the individual plant to make for perfect cooperation requires a plan fitted to the needs of the situation and not one in which the needs are forced to conform with the plan.

"Before deciding upon the adoption of any plan of this nature it would be well to take personal stock and I advise asking oneself: Am I a one-man organization man, or do I believe in the proper delegation of authority? If I could inject into every employee in my organization, the same amount of interest in its welfare that I feel, could we, working together, better conditions? Would I be willing to split 50-50 on any savings effected on the cost of production that was over and above past performances? If you can say yes to all three questions, I will say that you are ready to go."

At the conclusion of Mr. Holmes' address and at his invitation a number of questions were asked and a comparatively lengthy discussion followed from which we extract the following:

MR. FELDEN: What is your experience with the difference in the attitude between a male employee and a female employee?

MR. HOLMES: We have had equal success in either instance. We put in a plan in a textile mill, a knit goods mill, with about a thousand employees, and fully 80% of them, I guess, were females. We had one of the most unique situations in that plant, I believe, that ever existed. They had an I. W. W. situation coming on and we were really a little bravado in attempting to put the plan on in the first instance, because five days after the plan was inaugurated in the plant, the entire district went on strike through this situation. The yarn mill in this plant made an arbitrary demand, 45 workers in it, and the management simply could not make the grade on it and refused, and they struck. They were composed entirely of Italians, could not speak English at all, except one member who later proved to be a professional agitator. They struck—this was five days after the plan had been presented to the employees,—we did not have a committee elected, none of our machinery was set up, and we could hardly expect the employees to have a full understanding in such a short space of time; however, we called a special meeting of their legislative body, only the workers, we did not have a foreman or superintendent or member of the management present; we told them exactly what had happened and put it up to them flat-footed to handle the proposition. The first man who got up to speak said he was in favor of firing the whole blank bunch—that is what he said, in one word, talking about the others; another man, a rather elderly man, who had been with the organization a good many years, got up and said "I do not believe we want to hurry on this proposition, I think we are making a grievous mistake, because these people do not understand English and the plan is young, and they undoubtedly have not got this idea clearly in their heads; why wouldn't it be better for us to elect a committee here who can talk their language and speak English and will go to their homes, say tonight, and explain to them that we, the workers, are here to guarantee them a square deal, and see if we cannot get them to come back." They elected their committee, and that night they went out and called at the homes of several workers, and every one came back to work the next morning, with the exception of the agitator, naturally. Now that is an illustration of your female end. We had, as I say about 80% of females in that plant.

We put it on in quite a number of plants, strictly male plants, where there were very few females, and we have had wonderful cooperation throughout, all the way through. Of course, you can get your educational values across, and I do not think we should confine ourselves to simply a demarcation between male and female, because the biggest problem faced in any place is the problem of your capacity to educate; that is your whole problem. We put the plan on in a mill up in Connecticut where we had over 60% Polish, and we had some problem to get it across, not that they objected to it, but there is always that little latent suspicion that exists the minute anything is put at them. That was in the earlier days of our method of presentation; today we do not present the plan, we have changed our entire method of procedure, in order to relieve ourselves to a certain extent, and in place of calling the employees in a mass and giving them a definite plan all cut and dried that somebody else has worked out, we do not do that; it takes us in some instances four months before the actual plan is put across. In other words, we take advantage first of the natural tendency of humanity and appeal to their cupidity; we talk money first and we build up a desire on their part, and naturally get our educational

values across for increased dividends. Then, after we have shown them that the proposition is on the square and that it pays real money, we show them the needs of the organization and they themselves organize it. Was there something in regard to that male or female that I have not covered?

MR. FELDEN: Well, you did not answer the question exactly as I meant it. I wanted to know how the appeal in the form of a bonus on earnings affected the female as compared with the affect upon the male. We find from our experience that men are more susceptible to a proposition of that kind than women.

MR. HOLMES: Are you talking about an individual or a collective bonus?

MR. FELDEN: Well, a bonus paid to all employees.

MR. HOLMES: I want to draw a line between an individual and a collective bonus. I was in a mill yesterday afternoon, at Allentown, Penna., talking to the general

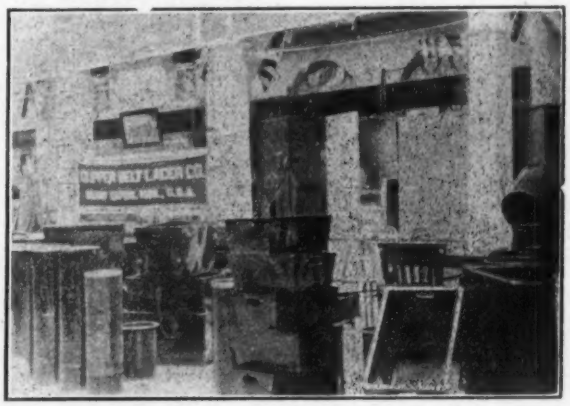
PHILADELPHIA DRYING MACHINERY CO.

superintendent of the mill, and he made the statement that he had put on a quality bonus; they are silk manufacturers, and he said he had increased his quality over 20%. That was individual, and he maintained that he had accomplished everything with his bonus that we could have accomplished with our plan. We said to him "you have a certain process of manufacturing; you are paying that bonus to the weavers?" He said "absolutely." "Are you paying it also to your dyers and your other workers?" He said "No, only to the weavers, they are the fellows that are interested." Now he would pay a bonus to his weaver, and by the time that fellow turned out a perfect piece of goods and he got down to the dyer, the dyer spoils the job and he has paid his bonus but lost the benefit. Now we make the whole process or rather the people collectively responsible for the entire process; it is a collective proposition and they all participate; in other words, every worker becomes a participator. We find that with the females you can appeal to their emotions quicker than to their intelligence. With a man, he says "what do I get out of it?" In presenting a plan before a body composed mostly of males, we will lay more special emphasis on the practical side of it and they will accept it in that way, while with a woman we will bring out the social possibilities, naturally the increased earnings, but she is more interested generally in harmony, in the spirit of the organization, in the get-together aspect; we find that is true.

A MEMBER: Does your plan require an exact cost system, the closing of the books monthly?

MR. HOLMES: Well, I can explain that better by telling you what has been done at other plants. We want monthly figures on your general cost; they are, as a general rule, available; if not, we set them up for you, but after they have been up once, the machinery you carry on is infinitesimal. For instance, in one plant up in New England where they have over a thousand employees, a girl declares the dividend once a month, and I think it takes her something like two hours to handle the whole problem. We have set up a chart and it is based on points; we do not give any actual figures, you understand that; it is based entirely upon the relation of the several elements to the actual plant accomplishment. We do not go into profit-sharing. The psychology of profit sharing is, I think, all wrong. We will say you put in this plan of profit sharing; take out so much percent for overhead, so much for the sinking fund, etc., and the undivided net profits are split between the employers and the employees; this was the plan adopted out here. If, at the end of the year, you have $50,000 to distribute in undivided profits, you cut it in two, $25,000 to the management, $25,000 to the employees.

I just want to stop right there and bring in a little thought. We will say that we have got just one lone agitator in the plant, just one; we have got one thousand employees, one lone agitator and nine hundred and ninety-nine other employees who love the management. We have



ROGERS FIBER CO.

got ten members of our Board of Directors; this one lone agitator, the minute that dividend is declared or that profit split is declared, gets up and says "Listen, fellows, I want to tell you something; I think they are slipping it over on us; there's a thousand workers out here who are going to get $25,000, $25 a piece; there's ten members of the Board of Directors that are going to get $25,000, $2,500 a piece; how do they get that?"

Now that is not the only aspect of profit sharing. There is this aspect, that when everything is high, wide and handsome, and you are getting nice profits, you can pay profits; the minute you commence to go down the other side, as some of us expect we are going to do in the near future, what are you going to say to Mr. Employee when those profits have been. we will say 100% is our basis this year, and next year they are down to 50% or 25%; how are you

going to explain to him that it was not rotten management? If the bottom drops out of your product, something happens to your raw material or anything alse comes about, how are you going to do that? And that is your problem from start to finish. It is a problem of mind, of understanding. You have got to sell yourself, and got to sell your ideas every foot of the way, and they have got to understand fully.

THE CHAIR: Is it your idea to pay a bonus monthly?

MR. HOLMES: It is a dividend every month; the dividend is distributed monthly, because to hold it over a longer period of time, we would lose the educational value in it.

THE CHAIR: Do you recognize the employees in the management?

MR. HOLMES: They have representation, yes; we have four functional levels in the average plant; in the smaller plants we only have three. We fit the plan to meet the needs of the plant, but there is nothing radical in the plan, it is all old stuff; it is simply a rounding out of the present organization. If you have got your chief executive and the next is your foreman and the next is your general employee, you are already organized down in every instance to your general employee. We propose to organize the general employee. In other words, I know that that usually hits a man rather hard; he says "You are going to organize my general employee; what is that going to do to an open shop?" Now frankly, until you make up your mind to organize your whole plant and be the leader of that entire organization, somebody else is going to do it if you don't. Absolutely you have got to make up your mind that you must have a unity of purpose in that organization and there must be a complete understanding.

A MEMBER: Is this the same system that is described in "Man to Man, or the Story of Industrial Democracy?"

MR. HOLMES: Fundamentally yes, practically no; we differ very much from Mr. Leitch. I know him personally and I think a great deal of him; in fact he and I spent over a week together a year and a half ago discussing the possibility of joining forces. We did not do it for a great many obvious reasons. I do not agree with certain of his views; he is entitled, of course, to his views, and I think I am entitled to mine. I believe this proposition should be a strict business proposition, should be based on sound economic facts and that those economic facts should be taken advantage of for their educational value.

A MEMBER: On general principles, does not Leitch advocate about the same thing, that is, the payment of dividends based on increased production and profits, and representation?

MR. HOLMES: Yes, but not on increased profits. In theory we agree perfectly; our plan differs materially from Mr. Leitch's; he had three levels, if you will remember, he had a house and a senate and a cabinet. Now it did not seem to matter whether a plant had two levels or three levels or six levels; that was something that the plant had to meet. Now we have put on, as I say, fifty or sixty plans of this kind, and we have not any two alike; no two plans will be identical. Any employer will tell you that his plant is different from everybody else's, and it is, absolutely, and that plan must meet the needs of the situation. It is just the same as if you today or any other time had continued with the organization that you had already put in and rounded it out. We may put in some joint committee of foremen and workers to handle little individual things or details.

A MEMBER: Is that the fundamental difference between your plan and Leitch's plan?

MR. HOLMES: That is one; the other fundamental difference is that we lay stress upon the money value of the proposition and not so much upon the sentiment. In other words, I believe the big difference between Mr. Leitch's philosophy and ours is the fact that he is inclined to emotion we are endeavoring to build this entirely upon reason. and I will tell you frankly that it is harder to sell it on a basis than it is on emotion.

A MEMBER: Have you made any calculations as to how to keep your employees satisfied when this downward trend goes from 100% profit to 25% on the other side?

MR. HOLMES: The capacity for earning will still exist, because we are not dealing with the going wage, that is we are not dealing with wages at all, we are only dealing with increased earning possibilities on the cost of production. Now the competitive wage generally makes the going wage. Whatever competition you are up against on your wages makes the going wage. We do not deal with that, that is a problem that will always fluctuate, and it is a problem that you and your employees will take up together. However, the plan gives you this advantage; of course, it is a competitive advantage at the base and all the way through, because if you are paying a dividend of 10% to your employees on actual increased accomplishment and are receiving a like amount of 10%, you have got the edge on your competitor of a full 20%; don't you see that right off the bat? Now, if the cost of living drops or the market becomes flooded with labor, or whatever the condition is that commences to reduce wages in your competitor's plant, you are simply going to reduce with him, you do that normally, but under this plan you have still got that edge over your competitor, and besides that you have a channel already created for a perfect understanding, and you have a spirit in your organization that has built up that belief in you that you are on the sqaure, something the other fellow has not got. The minute he commences to cut wages, the employees say he is putting it over on them. When you get to the point where you have got to cut wages, you have got a definite functioning body to go before and discuss it with. We had one plant in Massachusetts a month and a half ago where the employees voted voluntarily to go back to a 55 hour week to increase production to carry them over a particular period when they needed more product. You cannot do that today—it cannot be done—in the average plant unless you have some way of hypnotizing the crowd; I don't know any other way.

A MEMBER: You have spoken of plants employing 600 to 1,000 people or more; how about the applicability of your plan to small plants employing two or three hundred people?

MR. HOLMES: Oh, we have put it in plants with sixty employees and it works out perfectly. As I said, we simply make the plan meet the needs of the individual plant. Now we will have our president, that is our chief executive, our foreman's body and our workman's body, and then they may have one or maybe two joint committees, depending on the size of the plant, but those things are brought up

and the workers vote on them and discuss them; they have a full understanding of the whole thing; in fact the setting up of the dividends is handled by a committee which sits in joint session with the management, so there is no subterfuge in it in any way, shape or manner; it has got to be on the square."

It was then voted not to read the reports of the secretary, the treasurer and the board of directors but to have these spread upon the record of the association and distributed to the members.

The 16th annual convention was then declared adjourned.

The Banquet.

The final feature of the convention was the social occasion, the annual banquet, which was held Thursday evening at the Manufacturers' Club. This was a very successful affair, the hall being well filled with diners. During the service of the dinner, orchestral and vocal music was provided, and dinner courses were interspersed with the singing of popular songs by the diners.

THE "UNIVERSAL" WINDER AND ITS OPERATOR.

President T. H. Johnston was toastmaster of the occasion. After the dinner had been finished, he called upon those present to give a silent toast to the late Percy C. Withers, past president of the association.

A letter of regret was then read by President Johnston from Hon. J. Hampton Moore, Mayor of Philadelphia, who was supposed to have been the guest of honor at the banquet, stating that he had been called out of the city by a pressing engagement and therefore could not attend. Mr. Johnston then introduced Edward James Cattell, city statistician of Philadelphia, who, in his address, said that America has come out of every crisis without some of the things she doesn't need.

Mr. Cattell expressed it as his opinion that 95 per cent of the laboring people want to play straight, but that they think it a good, sportsmanlike thing to shirk. For instance, if a man does less work in a plant, it will necessarily mean that some other man will have to be put on the work being left undone by him, therefore he thinks he is doing his fellow-worker a kindness by not doing his best. They must be taught that they are doing the wrong thing, said the speaker. The employers must go to them on the level, with open hands and not with clenched fists, he declared, men should be honest with themselves and with others and must love work more than ever because its a sacred obligation.

The next speaker was Past President Charles E. Leippe, of the Reading (Pa.) Knitting Mills. He paid an eloquent tribute to Retiring President Johnston, who has served the association as its head for two years. At the end of his speech Mr. Leippe, on behalf of the association, presented Mr. Johnston with a diamond ring, as a token of the appreciation of the association for his efforts and labors in its behalf. In accepting the token, Mr. Johnston stated that it had been a pleasure to work with the members of the association because of the cooperative efforts which had been put forth by them.

The next speaker introduced was Hon. James M. Beck, who was formerly district attorney general in Philadelphia and later appointed assistant attorney general of the United States by President McKinley.

Mr. Beck took as the theme of his speech, "Work and Production." He said that America is living for today only, and in this is her greatest strength and also her greatest weakness. He denounced strikes as being deliberate blows at the government. He said that one of the turning points in American democracy was when the railroads said to the government, "Unless you raise the wages of labor, the railroads will stop with all attendant suffering and loss of life." The passing of the Adamson law was a manifestation that where we supposed law was supreme,

R. & H. CHEMICAL CO.

we had yielded to a group of men who were only a small fraction of the whole, that the ballot had been substituted by a power stronger than the ballot, a power that can take the country by the throat can be used at any time. The government, in that event, he continued, has been substituted by one of a small minority. Mr. Beck then read a portion of Washington's farewell address in which the Father of his Country had stated that "* * all obstructions to the execution of the laws, all combinations and associations, under whatever plausible character with the real design to direct, control, counteract or awe the regular deliberation and action of the constituted authorities, are destructive * *." The speaker stated that he thought that even though these words were written many years ago, they were never more pertinent or more pregnant with meaning than at the present time.

The solution of the labor problem, said Mr. Beck, is to induce the laboring man to raise his standard of political

economy, which is at present wholly false. The laboring class must be shown that they are the chief sufferers from their own acts and that it is therefore to their personal interest that they abandon their present attempts at oligarchy. The laboring man must be taught that the processes of war have caused the defeat of the bounties of nature and made this land a place of scarcity. If larger salaries were given, prices would consequently be much higher. Unless something is done, emphasized the speaker, a panic will inevitably result and there will be experienced a time more unbearable than ever before.

Also, he continued, the employer must appeal to the nobler instincts of the working man. We have got to reach the soul of the working man. Let us commence with the child, teach him the fundamental principles of this great country and then hope for a better time in the next generation.

"How many of you know what the word 'America' really stands for? It means 'all conquering work.' If we would only impress upon every one that work is the greatest thing in life. We are not going to gain anything by sounding optimism. We must fight to a finish the problem of vindicating the integrity of the law. We must go back to the old methods of thrift."

Someone might ask that if we need to go back to the old methods and need so much rejuvenation, then why are we so great, the speaker continued. He then pointed out that, to a large extent, we have inherited our prosperity, despite our economic follies. Had we made our success and done it all by ourselves, he said, we might have cause for complacency, but such is not the case.

"We must wake up," he concluded, "husband our resources and bring the forces of production to stop the present strangulation of communities. We have the spirit of the Declaration and of the Constitution; the inspiration of great men. Let us take high resolve to do our best to cure the present evils and to restore in its potency the greatness of work."

The Machinery Exhibit.

The Knitting Arts Exhibition was, as in the past two years, held in the Commercial Museum. Owing to the fact that practically every manufacturer of textile machinery is at the present time snowed under with orders—many being sold up for two and three years—there was a noticeable decrease in the amount of machinery on display this year. Many of the machinery manufacturers felt that the press of orders would not allow of their bringing machines to the show and those machines which were on exhibit, it was stated, had nearly all been sold and were brought to the show before being shipped to the purchasers. However, there was a goodly number of exhibitors, a large part of whom were displaying supplies and accessories.

The decorations in the hall were especially notable this year and worthy of mention. Drapes of colored cloths and the national colors were in prominence and an unusually large number of individual exhibitors took care to make their booths attractive. The flat ceilings of last year had been raised and this, with the side windows of the hall being uncovered, allowed plenty of light and ventilation to get into the hall thus allowing the exhibits to be shown and seen to greater advantage. Nor could the criticism of last year concerning the delay in the preparation of the booths and signs be repeated this year for there was nothing left by those in charge to deter the progress and success of the show from start to finish.

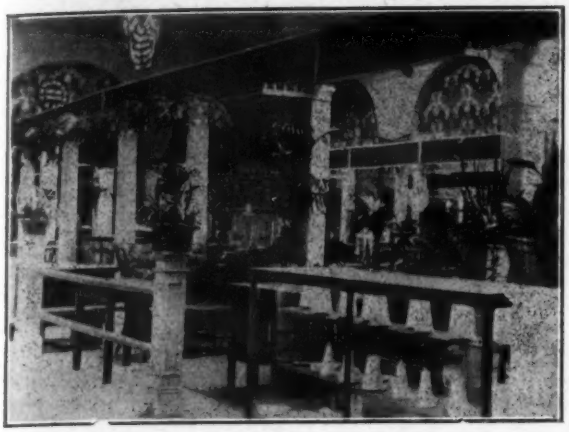
Another commendable feature—a great improvement over the previous years—was the restaurant conducted in the hall. Palatable menus were served for luncheon and dinner throughout show week; the large number of exhibitors who ate at the hall instead of making the trip back to the city restaurants was evidence of this. It is hoped that this good work will be continued in future exhibitions.

THE NATIONAL BUNDLE TYER CO., Blissfield, Mich., had on exhibit one of the "Saxmayer" bundle tyers manufactured by this company. While this machine has been on the market for about two years, this was the first exhibit at a textile show and the booth in which it was displayed was a center of attraction from the beginning to the end of the show. The machine is made to tie any shape or form of package. The bundle to be tied is placed on the table of the machine, and moved over a trigger underneath which causes a larger overhead trigger to bring the string down from the spool. The bundle is pushed further and after it has passed the opening in the table of the machine the larger trigger brings the thread down into the opening, where a bow-knot is securely tied. A feature of the machine is that the tension on the string can be so adjusted as to make as loose or as tight a fastening as might be desired. Frank and Albert Saxton were in charge of the booth and they announce that plans are under way for the manufacture of other types of the machine adaptable to other phases of the textile industry and to other general fields.

C. B. PAULUS, 1516 68th Ave., Oak Lane, Philadelphia, was represented at the show. There was no exhibit in this booth but the space was used as office quarters where knitters and other callers interested were given full information concerning the latch needles and transfer points handled by this exhibitor. Mr. Paulus was in attendance in person during the show. He was ably assisted in entertaining callers at the booth by Miss M. E. Holzbauer.

THE REFINITE COMPANY, Omaha, Nebr., manufacturers of water softening apparatus, were among the exhibitors. It was contemplated having a working replica of their apparatus at the show, but the congestion on the railroads prevented this. Demonstration was made of their zeolite water softener and literature pertaining to their product and souvenirs were given out. The company was ably represented by J. B. Price, their New York manager, who was in charge of the display, and Leon Whitcomb, general representative, who explained to callers at this booth the advantages of the Refinite system.

THE AMERICAN LAUNDRY MACHINERY CO., Cincinnati, Ohio, exhibited their well-known line of laundry machinery, and had quite a large corps of representatives on hand who entertained callers at their display. A new feature in the exhibit of this company at this year's show was the "American Cascade" machine for the dyeing, degumming and bleaching of hosiery. This machine was exhibited this year for the first time and attracted much attention. A feature of this machine is that it dyes the goods without roughening them; this is made possible by the Y-shaped partitions in which the hosiery is placed.



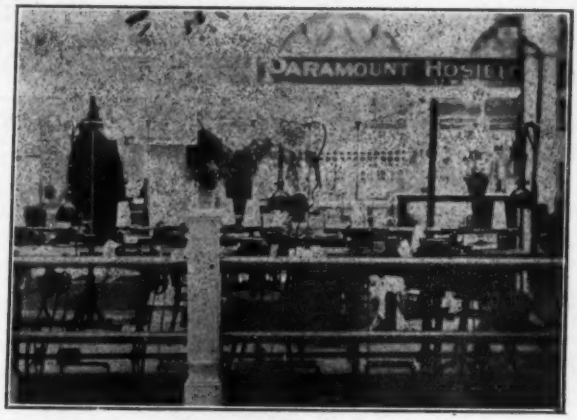
H. A. FLORSHEIM.

The standard overdriven extractor was also in the exhibit of this company. In this machine vibration is eliminated by means of the swinging curb. A 30-inch underdriven centrifugal extractor was also being demonstrated. Also on exhibit was the knit fabric calender for jersey cloth, bathing suits and underwear; this machine finishes and calenders these materials, and is equipped with a 44-inch automatic feeding device and adjustable spreader.

This company was also showing their automatic underwear press for sweaters, underwear and bathing suits, the rotary hosiery press, and the American underwear finishing press, used for finishing underwear after it is pressed flat and ready for boxing. The garment is laid folded on the buck of this latter press just before boxing, then pressed, this operation gives an extra fine finish to the goods. The machine may be used on flat knit goods and on one and one, two and two, and three and three knit goods. Geo. L. Wenzell, eastern sales specialty manager, was in charge of the exhibit. W. S. Taylor, general manager of the specialty department was present for a short time. Other representatives of the company at this booth were: C. A. Bowers, Philadelphia representative; J. P. McCarthy, Chicago manager; G. H. Mayer, Geo. G. Rups, E. B. Stanley, T. D. Webb, vice-president; Felix Kalb, W. A. Seidler, Gilbert Witters and L. F. Bowers.

THE WILDMAN MANUFACTURING CO., Norristown, Pa., had on display the following machines: one 16-inch, 8 feed, style FBS-S, spring needle machine, 22 needles per inch, for flat goods; one 20-inch, 8 feed, style FBS-2, 10 needles per inch, bathing suit machine; one 18-inch, 12 feed, style PB, 12 needles per inch, machine. These machines are equipped with individual motor drives and Wildman stop motions.

In the space of the Wildman company also the following: one 2¾-inch, style J8, necktie machine, equipped with Jacquard pattern drum for fancy pattern making; one 3½-inch, 240 needle, half-hose rubber, style H1, with dogless attachment, 2-speed drive and stop motion; one 3½-inch, style PT3, 240 needle, spring needle, half-hose machine; one 3¾-inch, style PH4, 260 needle, spring needle machine. Also a 4-end yarn stop motion on these machines. K. Howie, general manager of the company and in charge of the exhibit, and W. H. Allerton, were busy during show week greeting their many friends and demonstrating their machines. Others in attendance at this space



MERROW MACHINE CO.

were D. C. Bellis, F. H. Lockton and Lewis Custer.

THE ELECTRO BLEACHING GAS CO., 18 East 41st St., New York City, displayed attractive samples of various bleached products, hosiery, underwear, thread, piece goods, embroidery, etc., from leading bleachers and manufacturers of hosiery and underwear, showing the excellent results obtained from the use of "Liquid Chlorine" as a bleaching agent. Representatives of the company were at this booth answering questions which any bleachers brought in. J. B. Duggan, who has been with this company for many years, and who is well known among the mill men of the South and in New England, his special territory, was in charge of the booth. W. A. Kennedy was an able assistant at this exhibit. Vice-President D. K. Bartlett was also a visitor during the week.

ECONOMY BALER CO., 512 Arch St., Philadelphia, were exhibiting their tubular goods press and also their waste press for hosiery. Representatives were in attendance.

NATIONAL MARKING MACHINE CO., Cincinnati, Ohio, were exhibiting an interesting line of machines for marking fabrics and placing reinforcements and labels on knitted materials. Among the machines on exhibit were: the National H5 marking machine, the Rose patch and label sewing machine, Model 4 carton marking machine, Sherwood knit goods marker. Also on display were woven labels made on the Rose patch and label sewing machine. Horten Stanley, of the Philadelphia office, was in charge. Leonard Smith, secretary of the company, was also in attendance. Burt Sherwood and Arthur Rosenthal of Grand Rapids, Mich., were also in attendance.

WILLCOX & GIBBS SEWING MACHINE CO., 658 Broadway, New York, were showing their popular line of machinery, among which were the W. & G. automatic tension chain stitch machines, high-speed lockstitch machines, over lock machines and "Flatlock" machines, all run at factory speeds. D. H. Bates, manager of the textile department of the company, was present welcoming callers at the exhibit and was aided by a splendid corps of assistants among whom were Chas. W. Dowd, C. F. Burgner, N. S. Kellogg and Miss S. D. Singleton.

THE PARAMOUNT HOSIERY FORM DRYING CO., Hunter Bldg., Chicago, were on hand with a complete line of "Paramount" equipment, including the improved and practical types of forms and tables for the efficient and economical finishing of hosiery. Henry Pope, president of the company,

was a visitor at the show. Others in attendance from this company were: T. K. Long, F. A. Lukin, L. H. Bowling, Otto Siegel, J. B. Biselx, T. F. O'Connell, E. H. Perry, F. A. Kennedy and Miss A. J. Donnely.

STEEL & WIRE PRODUCTS CO., Philadelphia, were showing the Signode system of bale tying and box strapping, giving comparative costs of baling in the old box method and with the Signode system of ties. This product is receiving a great demand from the textile industry. Alvin Lovingood is southern representative and is reporting a good business. Those at the booth of the company at the show were J. T. Leach of Boston, Harry C. Joseph, P. C. Livingston, C. B. Rohland, and E. R. Andrews who is manager of the Philadelphia office.

THE PERMUTIT COMPANY, New York City, were located in spaces 89 and 90. On exhibition was a working model, an exact replica of large industrial installations of the clarifying filter, Permutit water softening filter with salt tank fully equipped for upward method of regeneration with salt recovery feature. This regeneration method was exhibited for the first time at a textile show and is noted for its simplicity and great saving in labor, wash water and salt. Manager of Sales A. T. Smith was in charge of the exhibition, being competently assisted by M. F. Corin, Philadelphia manager, and D. J. Hess and W. L. Lowrie, engineers.

KALI MANUFACTURING COMPANY, 1420 North Front St., Philadelphia, exhibited an extensive line of textile oils and chemicals including: Hydroxy finishing oils for cotton, silk, wool and artificial silk; boil off oil for degumming silk, hosiery, gloves and piece goods; Developene, a product which is creating a great deal of interest among the hosiery and yarn dyers, a small quantity in the final finish turns a rusty black to a deep rich black. Kier oil, for removing the natural oils and mineral oil spots from goods before bleaching and dyeing. Turkey red oils, 50 and 75 per cent; wool scouring oils; formaldehyde, used extensively in the dyeing industry; salicylic acid, used to preserve the size; Kali chlorine neutralizer, which prevents tender bleached goods; acetate of soda and a number of other products.

They also had quite a display of pharmaceutical products, manufactured by the Heyden Chemical Works of Garfield, N. J., for whom they are the selling agents in Pennsylvania, New Jersey, Delaware and Maryland. The display was in charge of S. G. Davenport, secretary, and James A. Branegan, president.

THE HEMPHILL COMPANY, Pawtucket, R. I., were showing five machines in their booths including the following: new model spring beard, 240 needle, 3½ inch diameter for ladies' work; new model infants' machine, 2½ inch diameter, 140 needle, for tipping heel and toe; misses' 160 needle, 3 inch diameter, footing-off machine; a 220 needle, half-hose combination, 3½ inch diameter; and a 240 needle, 3½ inch, ladies' combination machine, with new style web and take-up attachment. John Lawson, president and general manager, was a visitor during show week. M. L. Frost, Philadelphia manager, was in charge of the exhibit. Others in attendance were: Leon E. Bean, Geo. McDowell, E. M. Gunning, H. E. Gosling and Frank D. Martinez.

In connection with the Hemphill display was exhibited, for the first time, the Hineline stop motion, manufactured by the Hineline Engineering Co., Providence, R. I. This is an electrical stop motion equipped with mercury cups and requires only one motion for setting. E. S. Hineline was supervising the exhibit, being assisted by P. T. Phillips.

H. BRINTON CO., 213 Race St., Philadelphia, were demonstrating three machines manufactured by them: 3½ inch, 220 needle, Model "C" knitter making half hose; 3¼ inch, 220 needle, single feed ribber with selvage welt, two speed drive and dogless attachments making half hose tops; 1¾ inch necktie knitting machine. H. S. Horrocks was in charge of the exhibit, with R. J. Morningstar and A. H. Newell also in attendance.

UNIVERSAL WINDING COMPANY, Boston, Mass, had in operation in their spaces two gangs of their No. 50 machines, motor driven, using the new type curved base cones, which elicited much attention and interest from the knitters. The new cone is so curved as to prevent the yarn wound thereon from touching the surface on which the cone is placed, thereby keeping the yarn clean. Frank J. Quinn, Philadelphia manager, was in charge of the exhibit. Arthur I. Harvey, general agent of the company was also present, as was F. H. Bishop, secretary. Miss Margaret Crook demonstrated the machines, showing those visitors interested just how the winders are operated.

ROGERS FIBRE COMPANY, Leatheroid Sales Division, Philadelphia, had on exhibit an extensive line of Leatheroid warehouse cars, mill boxes, roving cans and general mill receptacles, which are manufactured from Leatheroid, made solely by the Leatheroid division of the Rogers Fibre Co., Kennebunk, Me. Paul B. Eaton was in charge of this display, while "Sunny Jim" Nieukirk, thePhiladelphia manager, was an occasional visitor.

ROESSLER & HASSLACHER CHEMICAL CO., 100 William St., New York City, had an instructive exhibit on the various textile products now being bleached by the mills in this country with peroxide. Among the processes explained during the show was the bleaching of cotton lines without preliminary boiling. Samples were shown of woolens and mixtures of wool and cotton bleached with a new formula which eliminates scouring, thus increasing production and cutting down the cost. Milton Kutz, Philadelphia representative, was in charge. T. D. Ainslee, bleaching expert and superintendent of the bleaching station of the company at Perth Amboy, N. J., was also present, explaining to knitters the advantages of the company's products. Others in attendance were: R. M. Levy, C. C. Rapp, C. J. Bowen, Carl Seilar, Geo. W. Kuchler, New York manager of the peroxide department, and Geo. Gilles.

FLETCHER WORKS (formerly Schaum & Uhlinger), Glenwood Ave. & Second St., Philadelphia, exhibited their Type E, motor-driven extractor, which is regularly manufactured in six sizes. Also a special underdriven, self-contained, 26 inch extractor which carries a normal load of 35 pounds and has proven a very efficient installation when used for "wet-outs," etc. This company is also specializing on their open top, electric, underdriven machine, concerning which comprehensive date was furnished to visitors at their booth. C. Wm. Schaum, sales manager, was supervising the exhibit; A. J. Cady, eastern agent, and H. Morshead, southern representative, were also in attendance, greeting their many friends.

HYATT ROLLER BEARING CO., New York City, had a very interesting and instructive display. On exhibit was a large model of Hyatt roller bearings in practical operation, showing just how this apparatus works. Various types of transmission apparatus equipped with the Hyatt bearing was shown and their principal advantages illustrated. A smaller bearing, encased in glass, was shown to demonstrate how small a quantity of oil is required to lubricate this type of bearing. A line shaft bearing was also on exhibit, demonstrating the durability of this product. W. L. Iliff, manager of the Philadelphia district, was in charge, and H. L. Littell, specialist in textile machinery, was also present.

MORSE CHAIN CO., Ithaca, N. Y., had planned to include in their exhibit a Morse rocker joint silent chain drive of two inch pitch by five inches wide. However, the apparatus was so large that it could not be shipped by express because of the embargo. On exhibit at the show was a spinning frame drive, in operation, demonstrating the fact that such a drive does not require much lubricant. There was also a motor stand for use in connection with line shaft drive on knitting machinery. M. H. Rodda, manager of the Philadelphia office of the company, was in charge of the booth; E. R. Morse, of the Baltimore office and H. E. Matthews, from the Charlotte office, were also in attendance.

TOLHURST MACHINE WORKS, Troy, N. Y., had none of their extractors on display because the officials felt that the press of orders coming in at the plant was such that it would not be justice to customers awaiting orders to bring one of the machines down to exhibit. Therefore the spaces taken by the Tolhurst Works were used as reception quarters for the friends of the company. In addition, however, there was a miniature model of one of the standard self-balancing hydro-extractors, catalogs, photographs, literature, etc., fully descriptive of the products of the company. R. K. Cheney and Wilmer C. Dutton were in attendance from this company.

SURPASS CHEMICAL CO., INC., Albany, N. Y., were showing cotton underwear, in both garment and piece, and manufactured by leading underwear manufacturers of the country, on which the "Autogyp" process had been used. The exhibit included many popular brands of undergarments. The company states that instead of bleaching cotton and cotton goods, etc., the "Autogyp" process may be used, which, in addition to dyeing, removes specks, motes, leaf shives, etc., in the one operation, thus making bleaching unnecessary. Circulars and samples of cloth on which this method had been employed were given out, and detailed information was furnished visitors at the booth. H. B. Smith, president, and I. J. Smith, vice-president, were in attendance at this display.

PROCTOR & SCHWARTZ, INC., 6th St. and Tabor Road, Philadelphia, formerly the Philadelphia Textile Machinery Co., featured in their display a working demonstration of the Proctor automatic boarding, drying and stripping machine for ladies' hose and men's half-hose. Models of Proctor dryers used in the manufacture of underwear were also shown. The design and construction of these dryers embody simplicity, strength and rigidity. It is said they are well fitted to withstand the wear and tear of heat, moisture, time and usage. Charles T. Griffith, of the hosiery dryer department, was in charge of the display. Fred Klenk, Chas. Schwartz, III, Charles S. Tiers and Paul G. Kent were also in attendance.

MERROW MACHINE CO., Hartford, Conn., manufacturers of the Merrow high speed overseaming, overedging and shell stitch machines, exhibited various models of their standard machines in operation. Among these were the following: Style 60S, for welting the tops of ladies' hose; style 60ND, for mock fashioned and for clocking half-hose; style 60D, for seaming ladies' garments; style 60JD flat seam work; style 22FJ, for ornate shell stitch on sweater finishing work; style 60ADSS, for seaming selvage edge on sweaters. They were also demonstrating their style 60BD, for cut work on sweaters, borders and sleeves; style 60ED, for cuff finishing on underwear work; and style 60HD, for hemming. E. H. Allen, manager of the Philadelphia office of the company, was in charge of the exhibit. J. B. Tolan and W. J. Longley, well known among the mill men, were also at this booth, demonstrating the machines.

DIAMOND STATE FIBRE COMPANY, Bridgeport, Pa., were showing fiber receptacles, mill baskets, trucks, barrels, roving cans, waste baskets and boxes. They also had a display board showing gears, bobbin heads, etc., manufactured by them. A new feature of this exhibit was a carrying board for hosiery, made of fibrous material, which should find extensive use in hosiery knitting mills. In charge of this display was D. M. Feldman, district manager. L. J. Kiernan, general representative, C. H. Pressel and Mr. Elsenhan were also in attendance. W. A. Adams, Jr., of the home office, was a visitor for a few days.

WESTINGHOUSE LAMP COMPANY, 165 Broadway, New York City, with branch offices and warehouses throughout the country, were demonstrating the high efficiency value of Westinghouse Mazda lamps. Their booth was attractively decorated and callers were supplied with literature descriptive of Westinghouse lamps and the works of the company.

THE ALTHOUSE CHEMICAL COMPANY, Reading, Pa., displayed a very attractive line of direct, chrome and acid colors dyed on silk, wool and cotton fabrics. Several representatives of the company were present at this booth to talk dyes to visitors, among these were H. E. Queran, Winfield S. Keek, Howard Faust, S. L. Bellemere and N. S. and C. Scott Althouse.

THE BRADLEY STENCIL MACHINE CO., and their eastern distributor, George C. Decker, 15 South Third Street, Philadelphia, demonstrated and exhibited the latest new model visible cutting stencil machines, stencil filing cabinets, fountain stencil brushes, waterproof stencil ink and oiled stencil paper. These materials are in much use and demand by manufacturers and shippers of the country.

H. A. FLORSHEIM, general sales manager for the Gray Manufacturing Co., Arlington Cotton Mills, Parkdale Mills, Inc., Arrow Mills, Inc., Myrtle Mills, Inc., and the Flint Manufacturing Co., retained his usual space at the show where the many friends and customers of these mills were greeted. Mr. Florsheim was at the exhibition in person, as well as his sales representatives, H. D. Skinner and John Stringer, J. H. Separk, treasurer, and J. L. Gray, general manager of the mills which Mr. Florsheim represents, were also at the show for a portion of the week.

PEECH SONS & PHILLIPS CO., Camden, N. J., had spaces 219 and 226 prepared as reception quarters where they received users of mercerized yarns who desired to take any matter up with them. Quite a number of yarn users were visitors at these booths during show week. In attendance from the company were Charles B. Phillips, H. S. Peech and George C. Turner.

C. J. TAGLIABUE MFG. CO., Bush Terminal, Brooklyn, N. Y., manufacturers of temperature indicating, recording and controlling devices for the textile industry, had an interesting display at the show. Their exhibit included the well known line of Tag temperature and pressure controllers for regulating the steam to dyeing or tinting machines, scouring or degreasing machines, drying chambers, bleaching machines, washing machines, drying forms and hot plate pressers. Another interesting feature was a combination time and temperature controller which automatically regulates both the period of time and degrees of temperature gradually, which is an essential factor in the bleaching and dyeing of underwear and cotton piece goods. Victor Wichum was in charge of the exhibit, being assisted by A. Traudt, Jr., sales engineer.

LINK-BELT COMPANY, Hunting Park Ave., Philadelphia, had on display what they call their "Paradox" which they have been featuring at their exhibits for some time. This consists of a number of chain drives placed behind a revolving disk. When an onlooker views the chains through the disk, he sees the chains entering and leaving the gears at an apparently slow speed, although the drives are operated at factory speeds, and thus sees the rolling motion in which the chain operates. This feature alone attracted much interest. There was also on display at this exhibit a spinning frame head driven by a 5-hp. motor, with chain drive, on 9-inch centers. This drive has found extensive use in the mills of the South. This company also had a stereomotorgraph showing a large number of applications of their chain drives in textile plants and also showing views of the four plants of the company, in addition giving data on the manufacture and operation of Link-Belt chains. Lawrence Spillan, salesman for the company, was in charge of the exhibit. G. H. Burkholder and H. D. Mitchell were also at this booth assisting Mr. Spillan in giving complete chain drive information to those visitors interested.

ATLANTIC DYESTUFF COMPANY, with main offices at 88 Ames Building, Boston, were showing a comprehensive line of materials dyed with their products. There were on display different popular brands of hosiery on which Atlantic dyes had been used. This company was also showing copies of their new book "Atlantic Blacks" which has received much favorable comment. Ben Lever, Philadelphia manager, was in charge of the booth. Others in attendance were R. J. Walker, manager of the Charlotte office, and A. C. Burrage, Jr., of Boston. Chas H. Stone, vice-president of the company, was in personal attendance for one day.

KAUMAGRAPH COMPANY, 209 W. 38th St., New York City, had an exhibit which brought out good inquiries and some orders at the show. They were exhibiting their burglar-proof trademark transfers for hosiery and underwear and other textile materials. These transfers, which are made in both the sheet and roll forms, were shown in all colors including gold and silver. Samples of some leading hosiery and underwear manufacturers' products, which had been stamped with Kaumagraph dry transfers, were on exhibit. W. F. Clowes, manager of the leather division of the company, was in charge of this display.

BARBER-COLMAN COMPANY, Rockford, Ill., manufacturers of warp-tying and drawing-in machines and hand knotters, were represented at the show. Barber hand knotters, were on exhibit and those in charge of the booth were kept busy showing interested callers the adaptability of hand knotters for use in tying almost any kind of yarn; how increased production per operator and uniform knots and ends can be secured by their use; that they eliminate trouble in after processes—weaving and knitting, etc.,—as knots tied by this method pass easily through the needles. The men who did this demonstrating and explaining were Will B. Anderson and P. D. Johnson of the Boston office.

PHILADELPHIA DRYING MACHINERY COMPANY, Philadelphia, manufacturers of dyeing, drying and finishing machinery, presses, etc., for the textile industry, were showing two working models of the "Hurricane" steel constructed dryers; one of these was an automatic looping and drying machine for use on underwear, toweling, piece goods, silks, plushes, etc.; the other was a truck type dryer for all kinds of skein yarns, tape, braid, etc. W. W. Sibson, secretary and treasurer of the company, was in personal attendance. Others present were C. H. Reumann, H. O. Kaufmann, Howard Morshead and E. L. Smith, the Boston representative.

ACME STEEL GOODS COMPANY, 2840 Archer Ave., Chicago, Ill., presented an interesting exhibit of nail-less steel strappings for cases, fiber containers, bales and paper packages. Samples of cold rolled bale ties were also shown. A display board with parts and a number of items made by this company was also included in this exhibit, which was in charge of C. J. Bruneel of the Philadelphia office, 512 Arch Street, who was demonstrating the specialties of this company. J. R. Regnas & Co., 10 Tift St., Atlanta, are the southern representatives.

SCOTT & WILLIAMS, INC., 366 Broadway, New York City, made an exhibit of their system of hosiery machines of various types and gauges. A feature of their display this year, which consisted of 14 machines, was a model K machine fitted with a new type sinker which permits the making of a much more elastic and wider welt than heretofore. This new device will also make a smoother fabric than has been obtainable in the past. In addition to their hosiery machines, this company exhibited their plain and automatic ribbed body machines for making fine gauge underwear fabric. A number of representatives of the company were present demonstrating this equipment.

The Carlyle Johnson Machine Co., Manchester, Conn., is sending out a 50-page booklet on "Clutches as Applied to Machine Building." The purpose of this book is to outline recent achievements of the Johnson friction clutch in the field of machine designing and to present to the builder of every type of machine some of the successful applications in his own particular line. In it are shown illustrations of various installations of this clutch on different kinds of machinery.

The Knit Goods Market

The latter part of May found the knit goods trade in the trough of a billowy sea, battered from one direction by waves of sentiment for deflation of values; from another, by a strong current of agitation for inflation of primary cost. John Wanamaker inaugurated the 20 per cent price reduction movement. The walking delegate is fomenting demands for 20 per cent wage increases. At present writing it appears that if there is to be deflation it will be brought about only by restricting the employment of help to the bare needs of manufacturers in meeting the requirements of their customers.

It is undeniable that the market was given a jolt with the recent department store announcements of price reductions all along the line. The climax came in the 20 per cent slice from prices in the John Wanamaker stores, which are credited with having conducted a most clever advertising campaign. A part of the public was first stampeded into buying by a Brooklyn store which announced that it was "cooperating with the flying squad of the department of justice for bringing prices down." Stores in Manhattan were quick to follow with special sales, and finally came the coup of the Wanamaker stores.

While Wanamaker has brought about a flood of buying, the stores' policy has had a deterrent influence on the smaller retailers and jobbers as well.

With the exception of sporadic buying in very small quantity and heavy duplicate business in several well known branded lines of hosiery that are widely advertised, transactions by jobbers in knit goods are confined to very light purchases, and several of the larger commission houses which hitherto would not think of selling less than case lots have accommodated customers with a few dozens.

A Central West jobber last week needed underwear for filling in assortments and took a total of 15 dozens covering two numbers. A Middle States jobbing establishment ranking among the larger of its class bought 35 dozens of a cotton stocking at $3.50 a dozen, which was 25 cents under the price of most mills for precisely the same type of stocking. Neither of these houses ordinarily would order less than five to ten cases for piecing out between seasons.

With some jobbers buying on a retail scale, several of the larger establishments are operating on an approximately normal level as to certain types of hosiery. A line of women's shaped seamless mercerized stockings selling around $8 to $9 is being taken at a rate that justifies the assumption the consumer will pay the price for wanted goods. A seller shows duplicate orders from one jobber for 90 cases, and even a jobber in New York, where dullness is more pronounced than anywhere else, had the courage to place a repeat order for 25 cases. These several orders called for mercerized and lisle, all shaped without the seam.

While silk hosiery as it has been commonly understood is draggy, silks in heather mix are commanding considerable attention, at $27 a dozen for one line and $30 for another, these prices being named to jobbers. Both numbers are being taken in comparatively large quantity. They extensively advertised over the name of the mill.

In contrast with operations in the mercerized and silks referred to, unbranded lines of women's mercerized hosiery offered at $6.50 proved no more attractive than at $7.50, the quotation based on production value. One line of branded mercerized has been taken off the market entirely and is not to be offered again until the market either has righted itself or has gone to smash. Mercerized hosiery simply cannot be sold at a profit at prices satisfactory to jobbers, it is stated by persons who have tried to tempt them into buying. So long as mercerized yarn continues to command prevailing prices, it is held, it were better to hold the manufactured goods than let them go at a sacrifice and have the market congested later.

An establishment operating on a commission basis is centering attention on a line of ladies 220 needle mock seam stockings made from finely finished combed yarn, and selling to jobbers at $3.50, which is regarded low. The house is depending on systematized circularizing of the wholesale trade, having called in its several salesmen.

While a line of 144 needle half hose, selling quite recently at $1.65 has been advanced to $1.75, quotations from two mills are lower on other numbers. One manufacturer offered misses 28 ounce ribs at $2.35, a drop of 15 cents, and another named $1.75 for 176 needle half hose, for which the mill had been getting $1.85.

There have been no such spectacular recessions in cotton hosiery as seem to have been looked for by jobbers. Silks may be expected to show marked declines. A New York house quite recently quoted $12 for a 10-thread 20-inch boot, the goods being in stock. To meet this in part, a Pennsylvania mill quoted $12.75 for 10-thread 16-inch boot for nearby delivery, to be made up as sold.

A branded mock seam silk stocking distributed by a well known New York selling agency has been marked $16, this being about 15 per cent under the price named at the recent advance. A similar reduction in the artificial silk lines of the same establishment has been announced in a letter to the trade.

Price reductions are of little moment to the average jobber, and several sellers attempting to emulate the Wanamaker stores have found the result directly the reverse of what was contemplated. Jobbers will not buy, except to fill in assortments, for immediate delivery. The Federal Reserve Banks have virtually told them they cannot borrow through regular banking channels for adding to their stocks. Their maturing obligations necessitate the conversion of merchandise into cash. Their reports to banks are to the effect that "demand is slackening in anticipation of lower prices." As illustrating the changed attitude, a jobber who during the last week in April was in the market for a total of 35,000 dozens of misses' coarse ribs and low end half hose, during the second week in May recalled the commission which he had given to an agent to obtain the goods. In the meantime the John Wanamaker stores had produced the trade sensation of the year in the 20-per-cent-off announcement.

Wanamaker buyers, in the second week of the price-smash sale, were in the market for several numbers of hosiery, but they wanted a recession commensurate with that which, it is represented, is in effect in the Wanamaker stores. Furthermore, they wanted delivery within 24 hours.

Several mill sales managers who were approached by one of the Wanamaker buyers declined to entertain his proposals either as to price or delivery, and referred him to jobbers who were known to be holding stocks speculatively.

It is suspected the department stores which have undertaken to deflate values will try to force concessions from manufacturers, for getting a maximum of glory out of their advertising campaigns.

As mill men recover from this latest market jolt they are coming to look on the Wanamaker coup as not an unmixed evil. The extraordinary sales are ridding the market of accumulations, and meanwhile scattered mills are laying off help, so that it would seem that by the time jobbers are ready to operate, wanted merchandise will not be plentiful, affording manufacturers who hold for that time, rather than make sacrifices now, an opportunity to come out more than whole.

The deadlock, with price the bone of contention, apparently is working toward a scarcity of merchandise at a time when distributors will want it. Their apathy, if continued very much longer, is certain to result in a radical curtailment of production. In the circumstances, it is held, it were better that mill prices be maintained. Sacrifices at the mill would mean little if anything to the consumer, and would only lead to demoralization in the industry.

A prominent New York mill agency selling the production of a number of manufacturers, announced reductions in the second week in May of $2.50 a dozen in three hosiery lines selling respectively at $11.50, $15.50 and $18.50; a reduction of $1.50 a dozen on $8.25 and $9.50 numbers, and $3.50 on a line selling at $13.50. A letter to the trade enclosing the new price schedule said:

"These prices are effective from May 1, and all undelivered orders will from that date inclusive be filled at the above (new) prices. Furthermore, in order to protect you against loss on goods which you may have in stock the seller will send you credit memoranda amounting to 15 per cent of any goods you have in stock, with the distinct understanding that this credit will not be paid by the seller in cash, but the seller will deduct from each future invoice a percentum of the amount of the invoice until the credit issued has been used up. Should your business with the seller in the future amount to the same as it did in March and April you will get full benefit of this credit in three months."

Hundreds of thousands of dollars worth of silk hosiery will be thrown back upon mills unless manufacturers take a firm stand against arbitrary cancellations, a flood of which reached mills, mill agents and commission houses during the second and third weeks in May.

Some of the cancellations are from such a source that the trade is inclined to suspect the situation with a number of jobbers impels them to take desperate means for relief from obligations. Supporting this view are requests from several large establishments for extensions of their accounts. One, rated by a reporting agency at between $400,000 and $500,000, in Class 1, writes for permission to defer payment of a $23,000 account.

There has been no speculation or allegation of speculation among manufacturers; therefor there can be no violation of any law of reason or ethics if they hold for prices that will yield a fair return on investment and high cost of labor and material. It is the prevailing opinion that it will be well enough to wait for the happenings that will force manufacturers to assume all the burden in the process of deflation.

The Federal Reserve Board, in its efforts to squeeze out speculation for the relief of legitimate industry and commerce, assumes there will be no "smash." As much firmness among manufacturers as is shown by the Federal Board will help to avert it. Acceptance of cancellations would hasten it.

It is a question among many manufacturers whether the policy of the Federal Reserve Board if persisted in will not precipitate the very thing it seeks to avert. One large operator who was asked for his opinion said: "I feel that the Board's contraction of credit is productive of widespread pessimism, which, if continued, will lead to stagnation and a slowing down in industry and commerce heading us toward panic."

The Federal Reserve Board, of course, aims only to check speculation through loans, in order to conserve credit for strictly legitimate purposes. It is shown, however, that it is not so easy to differentiate as the Board assumes. For example, there is the case of a hosiery company owning 55,000 pounds of raw silk, bought at $14.50 a pound in a purely legitimate way. Silk, at this writing, is quoted around $10.00. To hold the silk until it can be fed out as the market will absorb it necessitates the renewal of a very large loan, which, the holder is advised, cannot be permitted. If he sells, to meet his obligations, he will take a flat loss of $245,000. Is the credit situation so serious that persons in such a plight are to be forced to the wall? If it is, manufacturers say, the only safe course for the average mill is to complete orders on the books and clamp the lid on operations.

With the threatened financial embarrassment of the holder of silk, manufacturers would not be inclined to risk contracts for yarns except to cover commitments to their trade. Viewed from almost any angle, the outlook is for a gradual slowing down notwithstanding every man and woman who wants work can have it, at the highest wages ever paid, and savings banks are bulging with the hoardings of the thrifty.

Underwear prices are holding firm in probably the dullest market in fifteen months. Heavy weights are being taken in as fast as shipments can be made, notwithstanding the financial stress. Jobbers in several instances are asking for extended dating and not a few are in rebellion against paying invoices in advance of receipt of bill of lading, delayed by the widespread embargo and refusal of railroads to accept merchandise.

Case lots of winter underwear are being taken at last previous prices, a number of jobbers finding it necessary to fill in thus early, an indication of fairly good distribution among retailers.

Manufacturers of heavy weights—many of them—are from six to eight weeks behind their preconceived plan for selling for the first and second quarters of the year, and therefor, with jobbers accepting and eager for deliveries, mills are comfortably situated. From the mill standpoint, duplicate orders can be deferred for some weeks without any disturbance of manufacturers' plans. The trouble that is most feared is looked for in forced closing down of

mills in the determination to no longer yield to demands for increased wages. There is practically no buying of either spring or fall underwear, all interests apparently hewing very close to the line of their requirements.

Much of the underwear for next winter having passed to the ownership of second and third hands, no decline in prices to the consumer can be looked for except it be at the expense of distributors who might be compelled to fall in line with the price-reduction campaigns of department stores.

Looking almost a year into the future, it seems a question whether underwear for next spring and summer will show any price lessening. Two-season mills, most of which still are well engaged on fall orders, will discourage the naming of spring prices until the middle of July or the beginning of August, and it is feared that developments in the next six or eight weeks cannot be such as would justify mills going on the market. Unless the jobbing trade shows a changed attitude, it is understood, manufacturers will be inclined to defer the spring opening until even later than August 1st or sell in very moderate quantity under iron-clad contracts for practically immediate delivery.

Jobbers as a class favor a late opening, and they expect to operate very conservatively at the start. Basing a calculation on experience in relation to high prices, an executive of a leading mill making high grade underwear estimates that if buying be restricted to a level consistent with the views of the mill's jobber patrons, it may be necessary to reduce output about one-third.

As the forms close on this section of the issue, a report comes by wire from the meeting of the Jobbers' Association of Knit Goods Buyers at Chicago on May 25 which states that a big improvement in feeling was shown at this meeting. There were few cancellations from Central West retailers where optimism is stronger. Manufacturers prices were not regarded as inflated and under replacement values no radical changes are looked for. The jobbers are to stand by contracts being properly filled, buying limited quantities and more frequently. Those present favored deferring buying of spring 1921 underwear until after July 1. Large dealers in Omaha have discontinued cut price sales on hosiery. The situation looks satisfactory and it is believed that it will gather strength as the season advances.

The "Twyncone" Friction Clutch.

The "Twyncone" friction clutch is one of the Link-Belt Company's newest achievements. Among its many excellent features, it has one-point adjustment. All moving parts are inclosed, making for absolute safety. It is perfectly balanced, this in itself being a great advantage as it allows the clutch to run at very high speed without causing it to throw in or out.

Construction of the "Twyncone" clutch is very simple, and the moving parts are reduced to a minimum. It can be "eased in" when running at any speed. The friction cones are lined with thermoid. All parts are accessible, and can easily be replaced should the necessity arise.

Among the Knitting Mills.

The Alberta Knitting Mills, Inc., Schuylkill Haven, Pa., has filed articles of incorporation with a capital of $15,000 to operate a local plant for the manufacture of knit goods. Harry L. Miller, Port Carbon, is the principal incorporator.

Notice has been filed by the Harris Hosiery Company, Inc., Harrisburg, Pa., of an increase in its capitalization from $25,000 to $50,000, to provide for general business expansion. The company engages in the production of men's half hose.

The K-F Textile Mills, Inc., Utica, N. Y., manufacturer of union suits, etc., is arranging for the immediate erection of a new addition to its plant, to provide for increased capacity. The proposed structure, contract for which has been awarded, will be two-story, about 55 x 72 feet, and is estimated to cost $25,000.

The International Knitting Mills Company, 320 Cherry Street, Philadelphia, Pa., is planning for the establishment of a new plant in the third floor of the building at 9 Bank Street, comprising about 5,000 square feet of floor space, recently acquired under lease. It is proposed to inaugurate work at once on the installation of machinery and equipment for the manufacture of knitted coats.

The Wallace Knitting Mills, Philadelphia, Pa., has increased its capital from $20,000 to $50,000, for general business expansion.

The Idore Knitting Mills, Brooklyn, N. Y., has been incorporated with a capital of $5,000 to manufacture knit goods.

Contract has been awarded by the Everett Knitting Works, Lebanon, N. H., manufacturer of women's and children's ribbed underwear and union suits, for the construction of a new manufacturing plant at Littleton, N. H. The new works will be one-story, about 50 x 150 feet, and are estimated to cost $25,000; they will provide for increased output.

American Textiles, Inc., Bay City, Mich., manufacturer of knit underwear, hosiery, etc., has increased its capital from $2,000,000 to $5,000,000, to provide for general business expansion.

Notice of organization has been filed by the C. H. Knitting Mills Company, Newark, N. J., to operate for the manufacture of knit goods. Julius Herman and M. Calia head the company.

The Hosiery Manufacturers Corporation, New York, has filed articles of incorporation with a capital of $10,000 to manufacture hosiery, underwear, etc.

Arrangements have been completed by the Union Knitting Mills, Newark, N. J., manufacturer of sweater coats, bathing suits, etc., for the construction of the initial unit of its proposed new plant. Plans for the structure, which will be two-story, about 20 x 50 feet and of brick and mill type, have been prepared.

The Glen Knitting Company, Philadelphia, Pa., manufacturer of hosiery, etc., will build a new five-story brick and concrete mill, about 145 x 160 feet.

The Cambridge (Mass.) Knitting Company has filed articles of incorporation with a capital of $50,000 to manufacture knit goods. Philip H. See, Rochester, Charles A. Wilbur, Brookline, and George I. Murray, Natick, are the incorporators.

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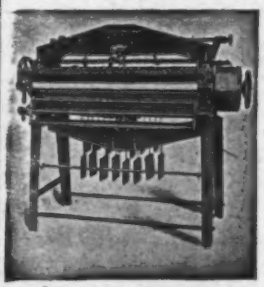

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The Rockford Knitting Company, Philadelphia, Pa., has recently awarded a contract for alterations and improvements in the power plant at its works.

The Berks Underwear Company, Hamburg, Pa., has recently completed negotiations for the purchase of property, to be used as a site for the construction of a new mill to be erected during the summer.

The Excelsior Knitting Mills, New York, have filed articles of incorporation with a capital of $200,000 to manufacture knit goods.

The Western Knitting Mills, Los Angeles, Cal., has filed notice of organization to operate for the production of knit goods. Arthur P. Nollau heads the company.

Nolde & Horst, Reading, Pa., manufacturers of hosiery, knit goods, etc., has practically completed the construction of the new addition to its local plant for increased operations. It is proposed to inaugurate work immediately following the installation of necessary machinery and equipment in the structure, which is three stories in height.

F. B. Cassidy, Uxbridge, Mass., has recently organized the Casco Manufacturing Company, and has arranged for the installation of machinery and equipment in a local building, the plant to be devoted to the manufacture of socks, gloves, etc.

The Nurat Knitting Company, Chicago, Ill., has been incorporated with a capital of $10,000 to manufacture knit goods.

The Beacon Knitting Company, Chelsea, Mass., is understood to be considering plans for the construction of three new plant additions, to provide for increased operations.

The Wynantskill Manufacturing Company, Troy, N. Y., manufacturer of knit goods, will build a new addition to its plant. The proposed structure, which is estimated to cost about $15,000, exclusive of machinery and equipment, will approximately double the present floor area of the company.

The Little Falls Hosiery Corporation, Little Falls, N. Y., has been incorporated with a capital of $25,000 to manufacture hosiery and knit goods.

The Eagle Knitting Mills, Los Angeles, Cal., have filed notice of organization to operate for the production of knit goods.

Plans are under consideration by the Dillsburg (Pa.) Manufacturing Company, manufacturer of men's, women's and children's hosiery, for the establishment of a new branch manufacturing plant at Duncannon, Pa.

The Weinerth Knitting & Machine Company, Reading, Pa., recently completed arrangements for alterations and improvements at its plant, to facilitate operations.

A knitting mill company has been established at Moreland, Ga., with $50,000 capital stock. The building has been purchased and 50 electrically driven knitting machines will be installed. E. M. Camp is president; W. F. Hetrick, vice-president and general manager; and D. C. Owens, secretary and treasurer.

The Thomasville (N. C.) Knitting Company, a new corporation, has purchased the Southern Finishing Mills and the Thomasville Hosiery Mills both of which will be consolidated under the new name. Brown Finch and B. B. Vinson compose the company. It is proposed to greatly enlarge the consolidated plants and an extensive two-story concrete building is to be erected adjoining the present finishing building.

A new knitting mill is being erected at Forest City, N. C., by Parsley & Tanner, Inc. The building will be 50 x 150 feet and of brick construction.

The Lynchburg (Va.) Hosiery Mill Company will increase its capital stock from $50,000 to $100,000, it is reported.

The Chamber of Commerce, Dublin, Ga., has organized a company for the manufacture of knit underwear.

It is reported that W. M. Franklin and others are interested in establishing a hosiery mill at Birmingham, Ala., with a proposed capital of $200,000.

John C. Farley, Jr., manager of the Alabama Hosiery Mills, Opelika, Ala., is reported to be planning to establish another hosiery mill at that place.

The Guilford Hosiery Mills have been incorporated at High Point, N. C., with a capital of $125,000.

The Holston Manufacturing Company, with hosiery mills at Lenoir City, Cleveland and Morristown, Tenn., the three plants having a capacity of 7,500 dozen pairs of hose a day, have sold the plants to the Scott-Kitzmiller Corporation, of New York. It is reported that extensions are planned by the new owners.

It is reported that the Chamber of Commerce, R. R. Marlin, secretary, of Dawson, Ga., is promoting the organization of a $100,000 company to establish a knitting mill at that place.

A clubhouse for the employees of W. B. Davis & Son, at Fort Payne, Ala., was on May 29 dedicated with appropriate ceremonies, which included an oratorical program featuring Champe S. Andrews, of Chattanooga, Tenn., as the leading speaker, and a track and field meet. The clubhouse will be placed in active service at once. A practical school will be conducted in connection with it, as well as a big playground.

The Southwestern Division of the National Association of Hosiery and Underwear Manufacturers, which recently elected F. L. Miller, United Hosiery Corporation, Chattanooga, President, has elected the following directors: T. H. Johnston, Knoxville Knitting Mills Co., Knoxville, Tenn.; A. W. McLellan, Alden Mills, New Orleans, La.; B. G. Brumby, Kennesaw Hosiery Co., Marietta, Ga., and J. H. Wilson, Richmond Hosiery Mills, Rossville, Ga.

The organization is sending to members, in Alabama, Georgia, Kentucky, Louisiana, Mississippi and Tennessee a questionnaire for obtaining information on surplus stock of yarn, to be revised as frequently as may be called for; mill equipment, machine production and number of dozens made last year of each men's, women's and children's hosiery; how far sold ahead and what steps, if any, have been taken for restricting production. It is intended to disseminate among members the information obtained, for their guidance, and it is expected the result will have a far reaching influence on manufacturers in other sections, which have yet to organize to become as effective as the Southwestern Division.

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The Yarn Market.

For the first three weeks in May, the cotton yarn market suffered a decline as to demand. Dullness was generally in evidence in all numbers, the finer counts of combed yarns being the most neglected. Coarse carded numbers and weaving yarns were also moving very slowly. A few desultory transactions were made during the first week with inquiry for yarns at a new low level; beyond these, however, there was very slack demand.

During the second week, inquiry continued meager and concerned small lots from stock. Practically the only business moving was of the kind that could be handled by truck. Price changes were comparatively few and almost exclusively the counts affected registered declines. This was most pronounced in combed peeler yarns.

Pressure against prices, exerted by continued absence of representative buying, affected certain counts. This was particularly noticeable in those mentioned—combed peeler yarns. However, minor changes resulted in carded ply skeins and warps.

Prices were so irregular that in revising price lists, the alignment that previously existed between the various counts was disturbed, due to the fact that some counts showed greater recessions than others.

For example, 20s/2 combed peeler yarns sold at nearer $1.50 than $1.60, although the latter price was 15 cents a pound under what had been paid for similar yarns. On the same basis, 24s were selling at about $1.75, 30s at $2.00, 40s at $2.30, 60s at $3.30, and 80s at $4.00 a pound. In other words, each individual count traded on a basis of its own, but combed peeler yarns, as a group, started on a steady downward movement.

The prices on the list in general, on the other hand, seemed to hold very well and, as a rule, remained firm. Delayed transportation, caused by rail tie-ups, was said to be the chief prop under the yarn prices. It was explained that stalled transportation helped to sustain prices in two ways. First, it created a fictitious shortage of yarns in consuming centers. Second, as there is such a thing as selling the yarn market short, prices would have probably been influenced downward in this way, but for the intervention of the freight blockade, as fear of failure to effect proper delivery, with a consequent risk of cancellation, operated to prevent much short-selling of yarns by interests who, otherwise, were convinced that the market was over-ripe for an extensive price decline.

Because of the freight blockade, some wonder was expressed as to the way manufacturers' yarn stocks held out. Some mills ran to capacity all through the month without buying any yarn, after it was believed that they would be forced to cover. Others pieced out short yarn stocks in some manner or other and showed no signs of seeking new supplies at spinners' prices.

Toward the latter part of the month, however, conditions appeared to clear up. Easier prices were reported in both weaving and knitting lines. Carded yarns joined the continued decline of combed lines on a downward scale as much as 10 cents on the pound in some instances. Better values, from the buyers 'standpoint, also existed in many counts of frame spun carded cones.

Spinners' offerings were also on the increase as the

month closed. It was disclosed that a good many spinning mills have considerably more open production during June and July than was formerly believed to be the case. Evidently, the producers are not as well sold up as was supposed. And with lower prices and a slightly better supply, demand became a little more significant.

As to the future, it is asserted at this writing that somewhat more business could be transacted were it possible to make the deliveries required. Inquiry for spot yarns from stock are being received which cannot be quoted upon. The remedy for this situation, of course, lies outside the yarn market, but it is being cited by dealers to show that the yarn business is not so dull, potentially, as it appears to be on the surface.

Some state that they look for the slack period to continue through June, but believe that at least moderate buying will ensue in July. On all hands it is admitted that the "crazy markets" of last winter and the seasons preceding are definitely a thing of the past, and yarn users will not longer commit the folly of paying any old price for supplies.

There are those who insist that the retail buying being induced by reduction sales throughout the country will result in bare store shelves and mill warerooms, which can only be replenished at higher prices.

Then there are others who expect a gradual, but persistent, downward revision of the cotton yarn price list for months to come. This process may be interrupted by occasional flurries, they admit, but the long haul will be toward considerably lower levels. Nobody expects prices of yarns or anything else to become involved in a violent crash. At the same time, it is believed that approximately the level to which yarn prices might drop, should a crash occur next fall, will be reached through an orderly process of deflation.

Following are recent quotations on the Philadelphia market:

Southern Single Skeins.

4s to 8s	72	10s	74 @75
12s	75 @76	14s	76 @77
16s	81 @82	20s	91 @93
24s	96 @98	26s	98 @$1.02
30s	$1.13@$1.20		

Southern Single Warps.

8s	72	10s	76 @77
12s	77 @78	14s	80 @93
16s	84 @86	20.s	93 @95
26s	$1.12@$1.25	30s	$1.22@$1.30
40s	$2.00@$2.10		

Carpet and Upholstery Yarns in Skeins.

8-3-4 slack	65
9-4 slack	66
8-3-4 tinged tubes	63
8-3-4 hard white warp twist	65@68
8-3-4 hard twist waste	63

Southern Two-Ply Skeins.

8s	74 @75	10s	76 @78
12s	77 @78	14s	80 @93
20s	95	16s	86 @87
20s	93 @95	24s	$1.03@$1.05
26s	$1.13@$1.15	30s	$1.25@$1.30
40s	$1.90@$2.00		

Southern Two-Ply Warps.

8s	72 @74	10s	76
12s	78	14s	83
16s	88	20s	95
24s	$1.06	26s	$1.15
30s	$1.25@$1.30	40s	$2.00@$2.10

Two-Ply Combed Peeler, Skeins.

20s	$1.45@$1.55	24s	$1.65@$1.75
30s	$1.90@$2.00	40s	$2.10@$2.20
50s	$2.80@$2.90	60s	$2.90@$3.00
70s	$3.50@$3.65	80s	$3.80@$4.00

Southern Frame Spun Carded Yarn on Cones.

8s	72	10s	74
12s	74 @75	14s	76 @77
16s	77 @78	18s	81
20s	84	22s	84 @85
24s	92 @93	26s	93 @95
30s	$1.03@$1.05	40s	$1.55@$1.60
30s tying-in	$1.00	30s double carded	$1.10@$1.15
30s tying-in	$1.00	30s double carded	$1.10@$1.15

Northern Mule Spun Carded Yarn on Cones.

10s	81 @82	12s	82 @83
14s	83 @84	16s	85 @86
18s	87 @88	20s	90
24s	95	26s	$1.03@$1.05
30s	$1.20@$1.25	40s	$1.65@$1.75

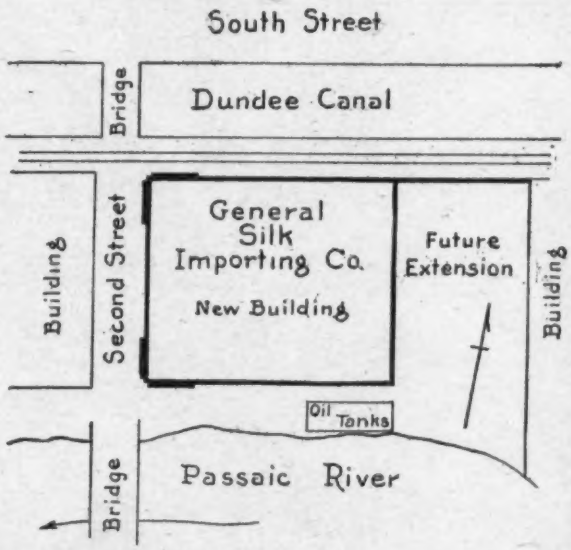
Northern Mule Spun Combed Peeler Yarn on Cones.

10s	$1.15@$1.16	12s	$1.17@$1.19
14s	$1.20@$1.21	16s	$1.22@$1.28
18s	$1.25@$1.27	30s	$1.60
36s	$2.10	38s	$2.15
40s	$2.25	22s	$1.28@$1.31
26s	$1.37@$1.40	28s	$1.55
20s	$1.27@$1.30		

Building a Silk Mill Under Difficulties.

With a congested site, underlaid with quicksand, and in close proximity to an elevated canal, the erection of the new building of the General Silk Importing Company at Passaic, New Jersey, was a problem of unusual difficulty. This problem was attacked and solved by the John W. Ferguson Company, of Paterson and New York City, by measures which will merit brief discussion.

Virtually the entire site is occupied by the new building. Hence there was not enough room on the premises for the



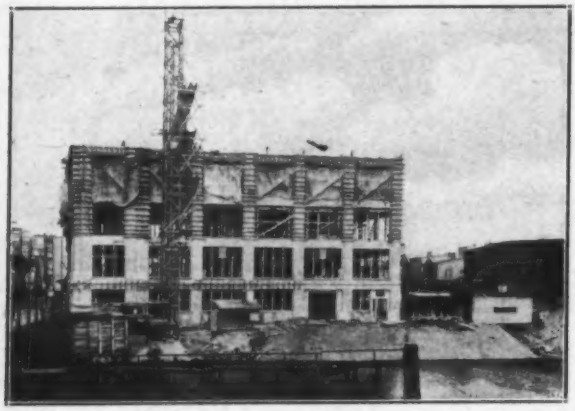
storage of the various construction materials, the preparation of forms, etc. The site is hemmed in between the Dundee Canal and a railroad siding on the north and the Passaic River on the South, between Second Street on the west and an existing building on the east. There was left for erecting space only a narrow 50 foot strip, east of the new building and connecting with the railroad siding, and a still narrower strip between the building and the river.

As this allowed no leeway in the construction layout, it made the handling of the work very difficult. Sand and stone were delivered by truck; so it was necessary to place the concrete tower in the narrow strip between the building and the river, where the materials could be delivered from the street. Access to the railroad siding for the unloading of reinforcing steel determined the use of the plot east of the building for the storage and bending of this material. The hoisting engine also was placed at this end, convenient of access to the steel storage.

For making up the forms, space had to be found at the nearest available location. This was a vacant lot, on the other side of the river and about 400 feet from the job.

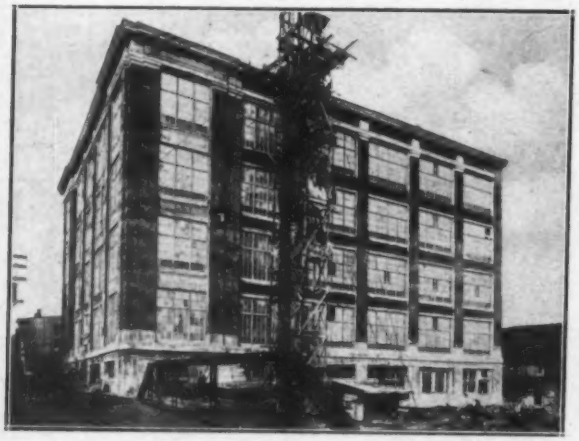
It was reached by the highway bridge. The forms were made up on this lot, carted across the river to the building, for use, and then carted back again for alteration or repair after they had been stripped from the work.

Adverse soil conditions, varying from loam with an underlying stratum of sand and quicksand on the canal side of the property, to mud and quicksand on the river edge,



made it necessary to drive concrete piles under all pier foundations. These piles varied from 35 to 45 feet in length.

Special means of protection, to secure the canal bank against rupture, were made necessary by the relative levels of the canal and the basement floor of the building, which is seven feet below the level of the water in the canal. The railroad siding also had to be kept open for traffic. It was decided to erect a concrete retaining wall along the



north side of the building. For this purpose a double line of wood sheet piling was driven, far enough apart to permit the placing of the footing for the north wall between the two lines. The material excavated for the footings was thrown over on the building site, where the ground level was low, and piled up to brace the sheeting.

Measuring approximately 130 by 105 feet in plan, the building has a total floor area of 75,660 square feet. It is built of reinforced concrete, flat slab construction, and has five floors. The roof is built of steel trusses covered with gypsum blocks, and has a monitor section running the full length. Windows on all four sides make the floors unusually light, the window area being almost two-thirds the wall area. The building was designed for future extension eastward, when necessary.

One photograph, taken in November, shows construction proceeding, the forms being up for the fourth story. The first floor slab was poured before the end of October. From this date the building went up rapidly, and the cornice was poured December 13th, only seven weeks after the first floor slab. The second photograph shows the building structurally complete. Manufacturing was actually started on January 12th, or a little more than eleven weeks after the pouring of concrete was started on the first floor.

The General Silk Importing Company distributes raw and thrown silk, silk on spools, cones, quills, and beams and dyed silk. The New York office is at 25 Madison Ave. The company is controlled by the Klots Throwing Co. interests, for whom this building makes the fourth erected by Ferguson during 1919.

Hosiery exports in March amounted to 1,427,597 dozens of cotton, valued at $4,319,538, and 80,345 dozens of silk, of a value of $623,412, being a greater number of dozens than for any month since and including January, 1919, and bringing the total exports invoice value for the fifteen months to $47,222,165. The larger foreign shipments of cotton hosiery for March were to England, 389,277 dozens; France, 119,640; Denmark, 65,572; Greece, 44,885; Italy, 46,451; Netherlands, 33,387; Sweden, 77,615; Canada, 30,142; Cuba, 53,315; Dominican Republic 35,393; Argentina, 46,088; Australia, 88,454; British South Africa, 31,011; Egypt, 41,175.

Argentina took 15,264 dozens of artificial silk; Australia, 7,162; England, 27,574; Canada, 5,915.

E. I. Du Pont de Nemours & Company, dyestuff sales department, Wilmington, Del., are sending out to the trade a very valuable binder showing some of the colors they are now putting on the market. The cover of this binder is made of Du Pont "Fabrikoid" and one of the features is that it is a loose-leaf book and other colors may be added from time to time as folders are produced. The southern office of this company is in the Commercial Bank Building, Charlotte, N. C., with John L. Dabbs as resident manager.

"Ladew Leathers" is the title of a 56-page booklet recently issued by Edw. R. Ladew Co., Inc., Glen Cove, N. Y., which contains a description of the various leather producers of this company. It also contains useful belt and pulley data for belt users.

The Textile Manufacturer Year Book for 1920 is being sent out by Emmott & Co., Ltd., 65 King St., Manchester, England. This is a well prepared volume and contains much useful mathematical and technical textile material and data. It also has a large number of memoranda pages in the back. A copy may be secured either through COTTON or direct from the publishers for $1.50 net.

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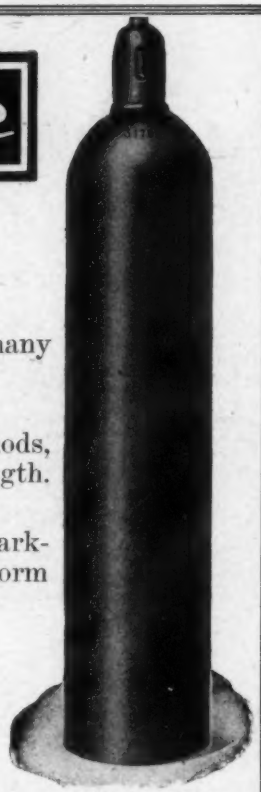

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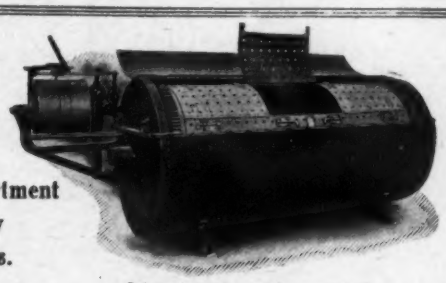

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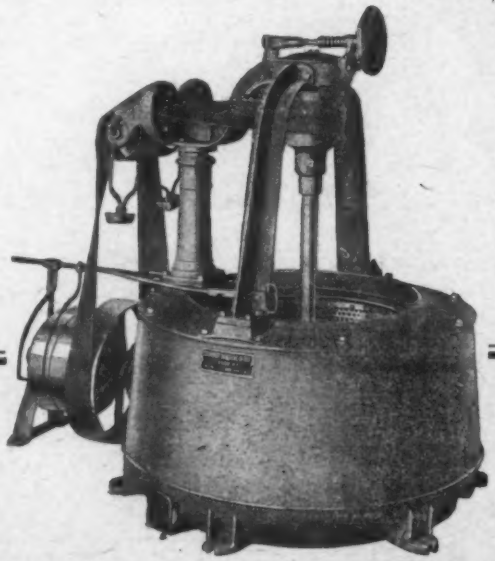

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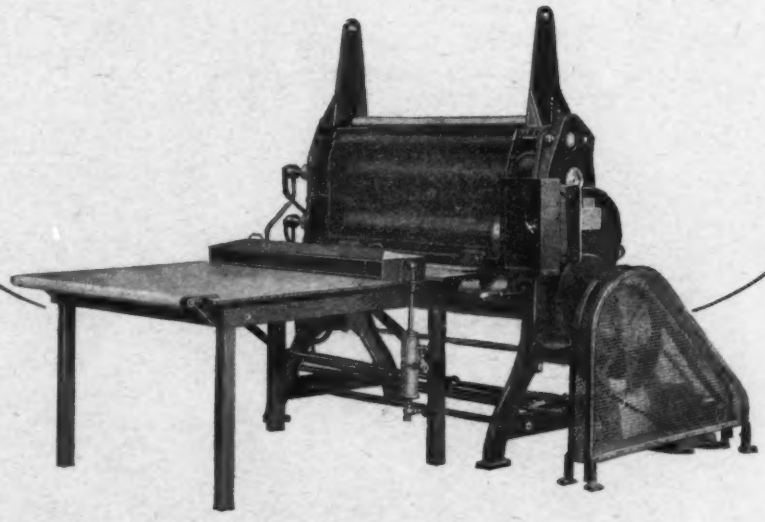

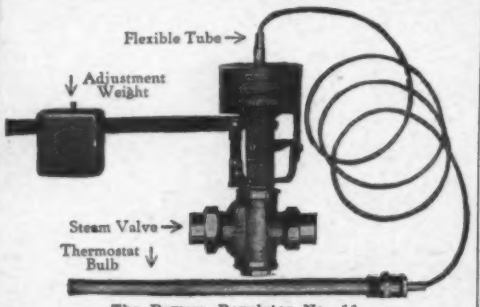

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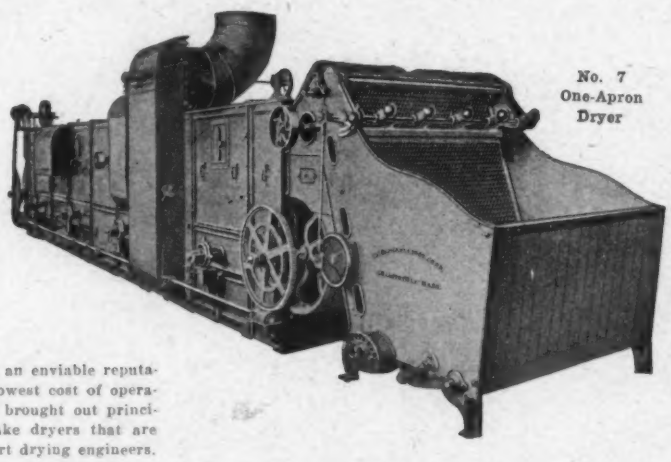

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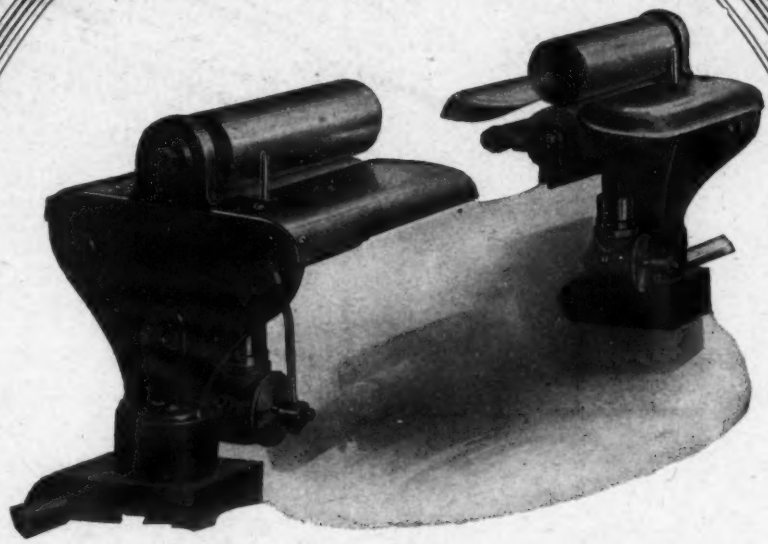

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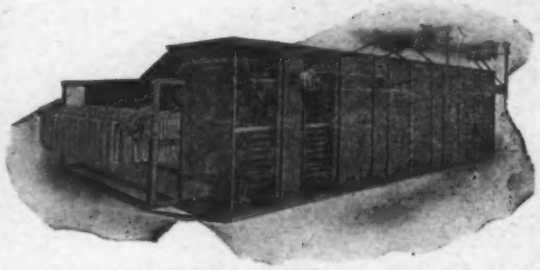

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The Spiders carrying these containers are revolved in the vat *in one direction.*

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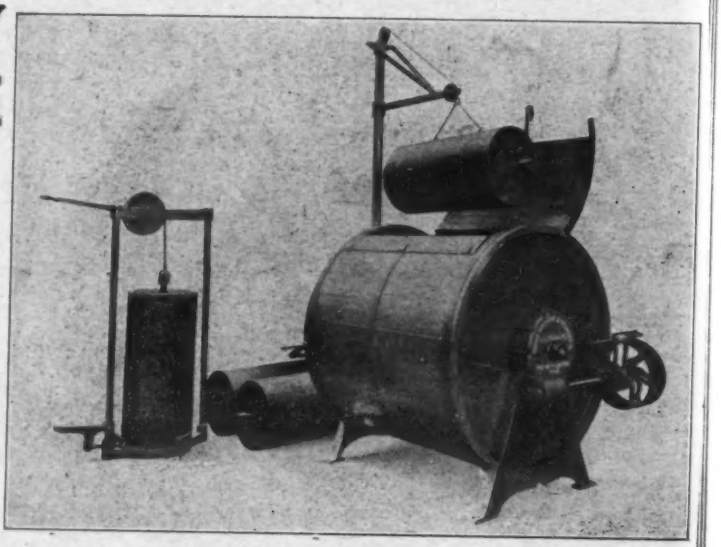
6th—Minimum of power required for operation.

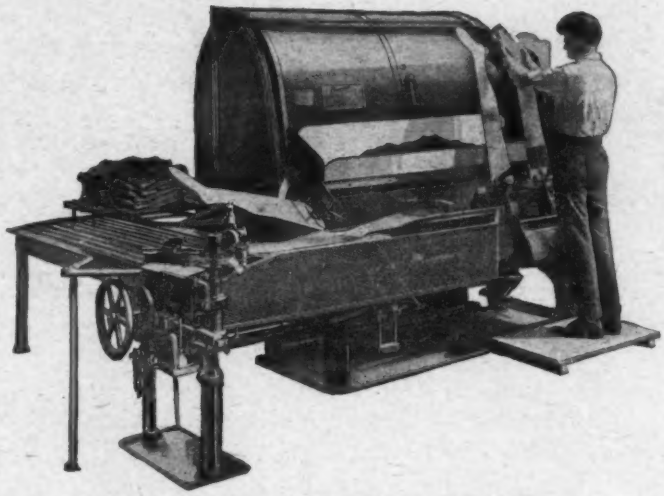
For further particulars and prices write or wire.



Cocker Machine & Foundry Co.

GASTONIA, N. C.

Builders of Textile Machinery.
Warpers—Beamers—Baling Attachments—Warp Dyeing Machinery—Reels



The Proctor Automatic Boarding, Drying and Stripping Machine for Hosiery

can be used on the finest grades of full-fashioned silk hosiery as well as on the cheapest seamless cotton goods. It can handle frail goods without danger of making seconds.

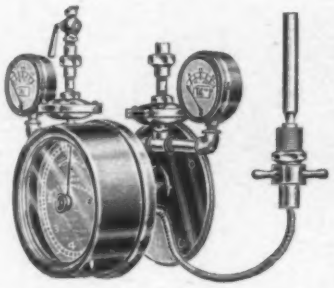
A feature of the machine which appeals to manufacturers of full-fashioned hosiery is the fact that the stockings can be boarded "one up and one down." After they have been dried and automatically stripped off the machine, they are automatically laid in pairs, thereby eliminating the necessity of sorting or pairing by the operator.

An illustrated catalogue describing many other profitable features together with a list of users will be sent on request. Write for your copy.

PROCTOR AND SCHWARTZ, INC.
Formerly Phila. Textile Mach. Co.
Phil'ade'phia, Pa.
Chicago New York
Charlotte Providence
Hamilton, Ont., Can.

"Proctor" DRYERS

115



Are You Guessing?

When the warp is lightly sized and you guess the temperature was **too high**, you guess right.

When the warp is harsh and rough and you guess the temperature was **too low**, you've guessed it.

Therefore, keeping the temperature even, is a matter of the greatest importance. Suddenly rising and falling temperatures are costly—no guess work about that!

The TAG Perfect Temperature Controller regulates the temperature smoothly, evenly and automatically.

Set the Controller at the point you want and the temperature will be maintained steadily at that point—not ten or twenty degrees above or below.

Pefect Sizing is the rule with a TAG Perfect on the job.

Bulletin C-425 explains.

C. J. TAGLIABUE MFG. CO.
TEMPERATURE ENGINEERS
18-88 Thirty-Third St. Brooklyn, N.Y.

Trade Mark Reg. U. S. Pat. Off.

TEST COLOR FASTNESS BY RADIATION METHOD

The need for a basic standard brought the perfecting of this method of determining whether a color is fast or not.

The FADE-OMETER was designed solely to fill a need for a standardized light equal in intensity to sunlight and available at any period of the year.

Elimination of the old time exposure to the rays of the sun has brought about a revolution of vast import to the textile manufacturer who using the Fade-ometer can see at any time of the year just how his dyes are standing up.

Unequaled for comparative service. Write us for fuller information in regard to this tester.

ATLAS
Electrical Devices COMPANY
120 S. Clinton St.
CHICAGO, ILLINOIS

Atlantic Yellow G

ATLANTIC YELLOW G is the latest of the Atlantic Company's series of Sulphur colors to be put on the market.

ATLANTIC YELLOW G produces a clear shade, and is especially useful both as a self color, and for shading sulphur brown, green and blue for the production of mode shades.

ATLANTIC YELLOW G possesses the fastness properties usually found in standard sulphur colors.

Atlantic Dyestuff Company
WORKS: PORTSMOUTH and BURRAGE
MAIN OFFICE: BOSTON, 88 AMES BLDG.
NEW YORK, 230 West 13th St.
PHILADELPHIA, 1530 Real Est. Trust Bldg.
CHARLOTTE, 708 Com. Nat. Bank Bldg.
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PROVIDENCE, 334 Westminster St.

Althouse Chemical Company

MAIN OFFICE AND WORKS

500-540 PEAR STREET READING, PA.

Manufacturers of

American Made Dyestuffs

Acco Direct Yellow

A Truly Fast Union Color.
Dyes Silk and Cotton Same Shade.

PHILADELPHIA OFFICE, 243 S. SECOND STREET

Improve Your Blacks

"Developene"

Turns a *Rusty Black* to a *Lustrous One.*

THERE is no slight of hand connected with it. Send a of pair stockings, a skein of yarn or a sample of fabric, which has been dyed black, washed but not finished, to our Laboratory.

We will finish it with "Developene" and return to you. There will be such an improvement you will want "Developene" for your dye house right away.

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KALI MANUFACTURING CO.

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TRADE MARK
K AL I

1409-13
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Formaldehyde—Salicylic Acid Prevents Fermentation of Size

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COTTON · WOOLEN · WORSTED GOODS · SILK GOODS · CARPETS · RUGS · LINEN · FURS · FEATHERS ·

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PROTECTION TO AMERICA AND AMERICAN INDUSTRIES

DU PONT DYESTUFFS

Keeping 67,000 Factories Running

THERE are in America, in the textile, paper, leather and allied industries, 67,585 *separate* establishments dependent, directly or indirectly, upon regular and uninterrupted supplies of dyestuffs.

In these factories, which represent an investment of four billion dollars, over two million people are employed. They produce annually in manufactured goods nearly six billions of dollars or 25% of the country's total output of manufactured products.

American dyestuff manufacturers are straining every effort to keep these thousands of factories running, these millions of workers employed and the flow of manufactured products unbroken. For these efforts to be successful however, American manufacturers, American workers and American consumers must themselves provide the means of safeguarding this industry in such a way that its permanence, stability and continuous development is assured.

E. I du Pont de Nemours & Company, Inc.
Dyestuffs Sales Department
Wilmington, Delaware

Branch Offices

New York Boston Providence
Philadelphia Chicago Charlotte, N. C.

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1802 SULPHURIC ACID ANTHRACENE BENZOL TOLOUL NAPTHALENE NITRIC ACID 1918

Starch

EAGLE FINISHING

400 MILL 500 MILL

C. P. SPECIAL FAMOUS N

BLUE RIVER CRYSTAL

These STARCHES are manufactured by carefully controlled and standardized methods.

PURITY and UNIFORMITY are secured by accurate laboratory tests.

ECONOMY and EFFICIENCY are proven by the constantly increasing number of exacting cotton manufacturers who are getting satisfactory results by using our STARCHES especially selected for their conditions.

Recommendations are based upon intelligent investigation of each individual problem.

Corn Products Refining Co.

New York

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Your Needs—Our Problems

INQUIRIES SOLICITED

COLORS ACID MORDANT BASIC DIRECT SULPHER
INTERMEDIATES
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A Complete Line.

MANUFACTURED BY

Consolidated Color and Chemical Co.
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MINEROL "F"

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All Sizing and Finishing Products for Cotton

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MONOPOLE OIL

Reg. Trade Mark No. 70991

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MAIN OFFICE and WORKS: PASSAIC, N. J.

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Fast Vat Dyes

Made by

THE SOCIETY OF CHEMICAL INDUSTRY---IN BASLE, SWITZERLAND

SOLD IN AMERICA

during the whole period of the war by

A. KLIPSTEIN & COMPANY, New York

and obtainable now in rapidly increasing quantities.

These Dyes are Faster than Indigo

They are sold under the registered trade marks of

"CIBA" and "CIBANONE" DYES

and include every necessary shade of color. For example—
"CIBA" Blue, Violet, Red, Scarlet and Bordeaux
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The Textile trade of America
need not suffer for the lack of

FAST VAT DYES

Quotations and samples on application

A. KLIPSTEIN & COMPANY

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"DYESTUFF DEPARTMENT"

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SULPHUR COLORS: Black, Blue, Brown, Green.
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MONOPOLE OIL
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VICTOR MILL STARCH

The Weaver's Friend

It boils thin—it penetrates the warps—increases breaking strength and carries the weight into the cloth. Being thoroughly washed free of gluten and other foreign matter it gives a bleach and finish to the goods that you can get from no other starch.

A trial order will convince you that VICTOR STARCH has no equal on the market.

THE KEEVER STARCH COMPANY, Columbus, Ohio

Southern Agent: MR. JAMES H. MAXWELL, Greenville, S. C.

If you are not already using VICTOR STARCH call on our representative for a demonstration at your convenience

Boston Philadelphia Chicago Columbus, Ga.

DOW Indigo

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Aniline Dyes and Chemicals, Inc.

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Mercerizing Gassing Bleaching

We have a new and strictly modern plant for mercerizing, gassing and bleaching.

Located as we are in the center of the combed yarn spinning industry of the South, we are enabled to furnish you with the highest quality processed yarns in all numbers.

The American Processing Company

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SELLING AGENTS,
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ESTABLISHED 1815.

ARNOLD, HOFFMAN & CO., Inc.

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BOSTON, MASS.

NEW YORK, N. Y.
PHILADELPHIA, PA.

CHARLOTTE, N. C.

Importers and Manufacturers of

STARCHES, GUMS, DEXTRINE, ALIZARINE ASSISTANT, SOLUBLE OIL, SOAP

And Every Known Material from Every Part of the World for Starching, Softening, Weighting and Finishing Yarn, Thread or any Fabric.

Special Attention Given by Practical Men to Specialties for

SIZING, SOFTENING, FINISHING AND WEIGHTING

Cotton, Woolen and Worsted Fabrics combining the latest European and American Methods.
We Believe There is No Problem in

SIZING OR FINISHING

That We Cannot Solve.
FORMULAS for the best method of obtaining any DESIRED FINISH on any fabric cheerfully given.

SURPASS CHEMICAL CO. INC. ALBANY N.Y. AUTOGYP PATENTED IN U.S.A. SEP. 20, 1904 IN CANADA OCT. 10, 1916

Eliminates Bleaching Preserves Tensile Strength

The AUTOGYP Process of Dyeing eliminates *all* Bleaching of Cotton Underwear, Gloves and Hosiery for Mock Egyptian and other light shades.

It simultaneously dyes to shade and eliminates all specks, motes, leaf and shives in one operation and in three hours' time by the use of AUTOGYP which is the registered name of the chemical used in the process.

The process requires Three Hours' time instead of 15 and preserves tensile strength, saves shrinkage, steam, labor, water and all chemicals used in chloride of lime method. Let us prove our claims at our expense in *your* plant. Send for full information.

SURPASS CHEMICAL CO., Albany, N. Y.

Sole Agents for the South
The Color Service Corporation
534 Canal St., New York

Represented in the South by
A. S. Roberts
215 E. North St., Greenville, S. C.

AUTO GYP
Process of Dyeing

RUBBER COVERED ROLLS

AND

POWER WRINGERS

With a thorough knowledge of the service required by textile mills and the facilities for producing the **HIGHEST QUALITY** obtainable, we are splendidly equipped for supplying RUBBER COVERED ROLLS and POWER WRINGERS of any size for every purpose.

WE ARE RUBBER ROLL SPECIALISTS

Our interlocking sectional ring roll for wool scouring is the BEST and most serviceable on the market today.

Guaranteed to last one year running days and six months running days and nights.

Write for illustrated booklet on our products.

THE AMERICAN WRINGER CO.

DEPT. F. WOONSOCKET, R. I.

FIG.20.

All our Baskets made from Lane Duck of our own weaving.
By use of strictly long staple cotton and approved modern methods, unusually high tensile strength and wearing qualities are obtained.

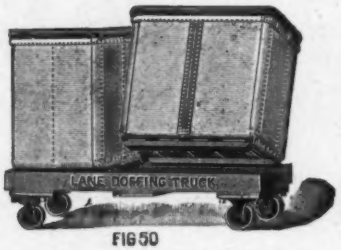


FIG 50

All frames made of highest grade Spring Steel, patented semi-flexible Eye-joints, affording a frame that YIELDS under strain instead of breaking or bending.

STURDY

Yet not an ounce of Superfluous Weight in

Lane Canvas Baskets

Standard American Equipment

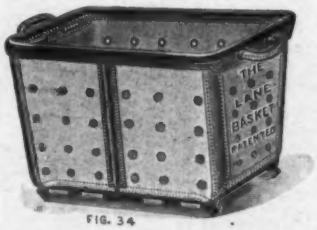


FIG. 34

Lane Steamers made in both oblong and round. Materials used withstand heat, moisture and handling to a degree found in no other basket.

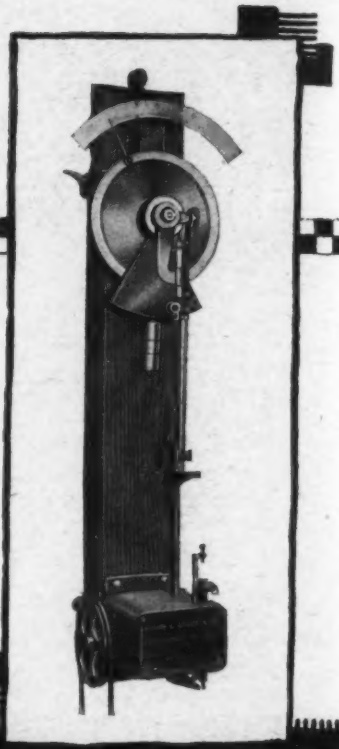
Write for Catalog

FIG.27

This truck embodies all the advantages of Lane Baskets, plus our specially designed Thread guard Casters which are, IN FACT, NON-CLOGGING. Furnished in either stationary or swivel frame style, of generous diameter and tread.

W.T. LANE & BROTHER, Manufacturers **Poughkeepsie, N. Y.**

SCOTT TESTERS:



BREAKING strength of the single yarn or cord is of great importance in many industries. The cut shows a Scott Tester designed exclusively for this work. Extreme sensitiveness, rigidity, simple construction, easy and quick operation are noticeable features of this model. The patented eccentric grip clamps with which it is equipped are the most practical and efficient yet designed for this work.

Catalog of this and many other Scott Testers mailed upon request.

HENRY L. SCOTT & CO. Providence, R.I.

Modernize your Twisters with Allen Ball Bearing Twister Spindles

Ball Bearing Spindles eliminate friction and heat; reduce maintenance and attention to a minimum; allow greater speed at less power consumption. ALLEN SPINDLES are steadier running, produce more, stronger and better yarn than plain journal twister spindles.

Allen Spindle Corporation

80 Boylston Street

BOSTON, MASSACHUSETTS

SPECIALTIES
SPINDLES & TWISTER RINGS

ELLIOTT A. ALLEN
PRESIDENT

THE SIMPLEST AND THE MOST ELABORATE

FABRICS

Are produced on

LOOMS

From the

Crompton & Knowles Loom Works

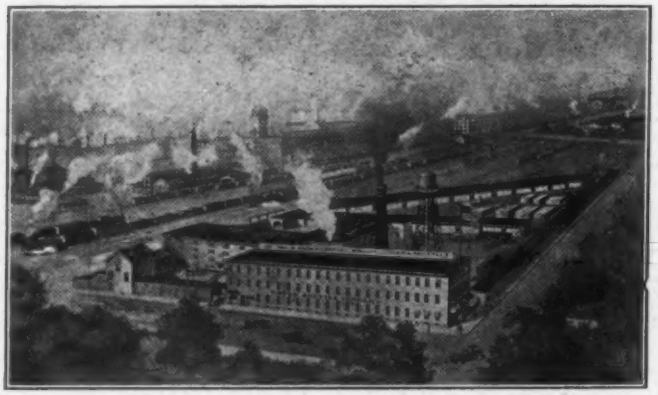
WORCESTER, MASS.

Providence, R. I. Paterson, N. J. Philadelphia, Pa.

Alexander & Garsed, Southern Representative, Charlotte, N. C.

The David Brown Company

Factories Lawrence, Mass. U. S. A.



High Grade Bobbins, Spools, Shuttles and Skewers.

Facilities are the Best.

Correspondence Solicited.

SPOOLS

Let us submit prices and samples on WARPER and TWISTER SPOOLS. Plain wooden head and metal shield. A list of Southern Mills using spools given on request.

Greenville Spool & Mfg. Company

Greenville, S. C.

WHILE YOUR MILL IS MAKING SUBSTANTIAL PROFITS

is the time to equip with loom-harness whose service is measured from year to year instead of month to month.

"DUPLEX" FLAT STEEL HARNESS can show records of ten to fifteen years service at an average cost of ONLY 10c to 12½c PER SHADE PER YEAR with high cloth production and low percentage of seconds.

Let us quote you.

STEEL HEDDLE MFG. CO.

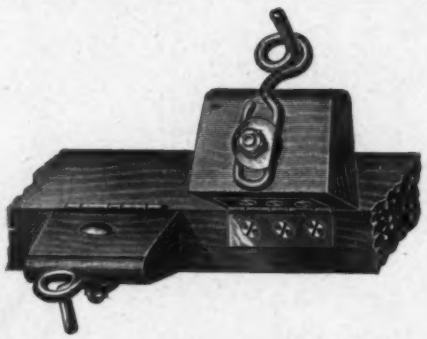
GREENVILLE PHILADELPHIA PROVIDENCE

Southern Office

111 Washington St. Greenville, S. C.

Hampton Smith, Southern Manager.

The Palmer Adjustable Thread Guide



For Ring Spinning and Twisting Frames

Easily adjusted.

Extreme accuracy and permanence of setting.

Cheapest of them all.

Mail guide-block for free sample.

Patented and manufactured by

THE I. E. PALMER COMPANY

Middletown, - - - Connecticut

MOSSBERG

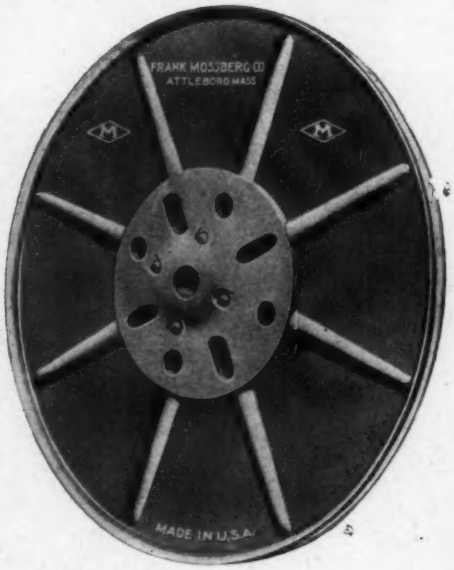
STEEL BEAMS AND SPOOLS

LESS EXPENSIVE!

While undoubtedly superior in every way to wood or cast iron, Pressed Steel Beams, Reels, and Spools, because of the saving in repairs, and replacements are the least costly.

Mossberg Pressed Steel Construction is being used by mills the country over with a resulting saving of money and time.

We will gladly send you our catalogue of Pressed Steel Beams, Reels, and Spools. This book takes care of practically all winding and reeling requirements.



FRANK MOSSBERG CO.

ATTLEBORO, MASS., U. S. A.

Backing Up Your Overseer

Your overseer knows what his machine hands are doing in a general way, but he could tell much better from **specific records** of each operative's work—as furnished by Veeder Counters.

The records of the counters show what's being produced at any machine and at any time of day, so there's an immediate check-up on slackened production at any point in the mill.

And this watchfulness of the

Veeder COUNTER

is less annoying to the worker than the watchfulness of his superior—which makes for less friction and *more initiative* from employees.

The Hank Counter illustrated above records the output of Spinning Frames, Mules, Cards, Lappers, Combers and any frame or machine where the product is ejected by rollers. Usually geared to measure in hanks of 840 yards each, and reads in plain figures. This counter is built especially and exclusively for textile machinery; its mechanism will stand service under textile mill conditions; it is not an adaptation of a counter for general machine use. Specially built models for other textile machines are shown in the Veeder booklet—**ask for copy.**

The Veeder Mfg. Co.

6 Sargeant St., Hartford, Conn.

MAKE
THE AIR PLEASANT IN YOUR MILL

Improving the working conditions in your mill means better work—greater output—less time lost—

Fredisco

HUMIDO OIL "SOLUBLE"

Is made from Pure Steam Distilled Pine Oil

1 to 2 quarts a day in your Humidifier System will give the air a clean Pine Odor.

It is stimulating. Has no gum or rosin in it.

Write for sample—if you are not using it.

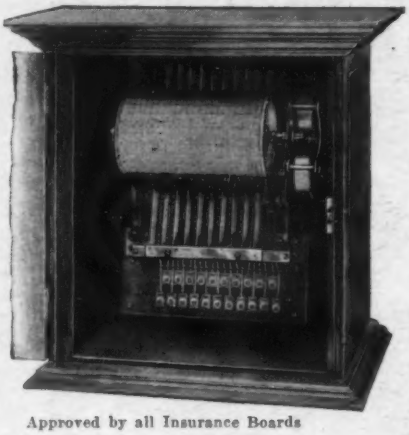
Manufactured Only by

Frederick Disinfectant Co.

Manufacturing Chemists

ATLANTA, GA.

THE BOSTON MAGNETO RECORDER



THE LAST WORD IN WATCHMAN'S CLOCKS

(STATION)

Approved by all Insurance Boards

This Tri-Record Clock furnishes a clear and separate registration for Saturday Night, Sunday and Sunday Night without changing the dial.

Estimate for complete installation cheerfully furnished on request.

WRITE FOR CATALOGUE

ECO CLOCK COMPANY

196 Congress Street, Boston, Mass.

24 Cortlandt Street, New York
23 Walton Bldg., Atlanta, Ga.

S. S. & F. Co., Inc.

CHARLOTTE, N. C.

The S. stands for Southern, the S. & F. for Safety First

The only Flyer Presser Manufacturers in the South. Does your machinery need OVERHAULING? Does your Steel Rolls, Flyers, Spindles, etc., need REPAIRING? Are you NEEDING Flyers, Flyer PRESSERS, Rings of any kind, Guide Wires or any other supplies? If so, this is YOUR BUSINESS — OUR BUSINESS IS SUPPLYING these needs.

Southern Spindle & Flyer Co., Inc.

CHARLOTTE, N. C.

W. H. MONTY, - Pres. and Treas.
W. H. HUTCHINS, - Vice-Pres. and Sec.

AMERICAN
SUPPLY COMPANY
PROVIDENCE, R. I.

MANUFACTURERS OF

Loom Harness,
Weaving Reeds,
Oak Tanned Leather
Belting, Strapping,
Etc.

We make a specialty of Harness for Warp Drawing Machines

NOTE—No orders too large for our capacity. None too small to receive careful attention.

Elastic Webbing Looms

Fletcher High Speed Elastic Webbing Loom.

Features the essentials of

HIGHLY DEVELOPED SIMPLICITY OF DESIGN.

AVOIDANCE OF COMPLICATED MECHANISM.

HONESTLY MADE AND CAREFULLY INSPECTED PARTS OF THE HIGHEST QUALITY.

SKILLED WORKMANSHIP BY EMPLOYEES WITH YEARS OF EXPERIENCE.

Adapted for webbing from ¾" to 3". Fletcher Looms will weave it better because we have built into them

Speed--Safety--Stability

to a marked degree, all tending to maintenance of maximum quality production at minimum of operation and upkeep costs at all times.

Our technical and engineering departments are always at your service.

FLETCHER WORKS

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Also manufacturers of

FLETCHER COTTON BELTING LOOMS
FLETCHER ASBESTOS WEBBING LOOMS
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FLETCHER MULTI-CONE CLUTCH

The Standard for Service

FIBRE RECEPTACLES

Diamond Fibre Trucks, Roving Cans, Barrels, Boxes, Baskets, etc., represent the highest standard for quality and service. The mill, factory, warehouse, or store that uses them is equipped for dependable, economical service.

Diamond Fibre Receptacles combine great strength and durability with light weight and convenience. They do not dent, splinter, crack, or break. Their smooth, flawless interior protects their contents. Their color is inbuilt and therefore does not chip, nick, or rub off. They are superior in construction and appearance.

Thirty years' experience in building receptacles stands behind Diamond Fibre Receptacles, each of which is carefully designed for the work it is to perform. They are furnished in standard shapes and sizes, or made to any specifications. Prices and complete information on request.

Send for special catalogue.

Diamond State Fibre Company

Dept. W Z

BRIDGEPORT, PA., (NEAR PHILADELPHIA,) U. S. A.

In Canada: Diamond State Fibre Company of Canada, Ltd. Toronto, Canada.

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CONVINCING COMPARISON

SHOWS THE SUPERIORITY OF

SIGNODE SYSTEM

OVER THE USUAL BALE TIE.

LET US SEND YOU FULL DETAILS

SIGNODE SYSTEM, INC.

CHICAGO ATLANTA

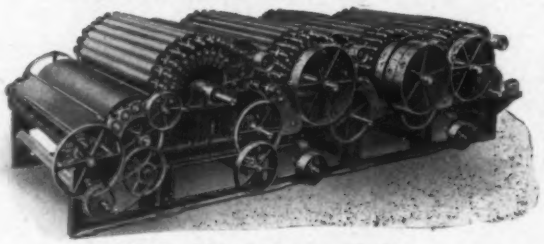
Boston New York Philadelphia San Francisco Toronto

$\frac{5}{8}$" x .015 SIGNODE TIE	COSTS 12 % LESS PER FOOT	HOLDS UNDER 800 LBS. PULL	NO "SPIDER" TO INJURE HANDS
Compared with			
USUAL $\frac{5}{8}$" x .017 BALE TIE	COSTS 12 % MORE PER FOOT	BREAKS UNDER 500 LBS. PULL	DANGEROUS "SPIDER" OFTEN PRESENT

SMITH & FURBUSH MACHINE CO.

PHILADELPHIA, PA.

A Garnett Machine of this size will reduce to fibre hard twisted thread waste without materially shortening the staple. We also build smaller machines for working soft washes.



4 Cylinder 30-inch Garnett Machine.

This Garnett is built on our own sectional unit frame construction and contains many improvements which we will be glad to explain.

Ask for circular S-182.

TEXTILE SCALES

No. 5005. Gives yards per pound
No. 5000. Gives ounces per running yard
No. 5010. Gives yarn number for cotton yarns
No. 5015. Gives yarn number for woolen yarns
Used by U. S. War and Navy Depts.

CHRISTIAN BECKER'S ANALYTICAL AND SILK BALANCES

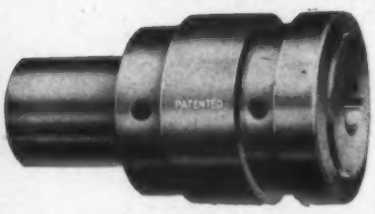
THE TORSION BALANCE CO.

Main Office, 92 Reade Street, New York

FACTORY: Jersey City, N. J.

BRANCHES: 31 W. Lake St., Chicago. 49 California St., San Francisco.

THE JOHNSON FRICTION CLUTCH



Single Clutch Exterior.

A light powered clutch of correct design and superior quality, for use with standard pulleys wherever a flexible power control is required.

Made in both single and double types, extremely simple, compact and durable in construction. Adaptable to all speeds and conditions.

The Johnson Clutch has been widely adopted for line-shaft drives in textile plants, and has been successfully incorporated into textile machinery of all kinds.

Write for our Catalog "G."

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN.

Kaustine

Sanitary Sewage Disposal Systems

Better Morale in *Your* Mill Village

THE better class of workmen ***seek*** the ordinary conveniences and comforts of home life, which you ***demand*** for yourself. They know that their productive power and earning capacity are dependent upon their physical condition as well as upon their mental state.

Kaustine Sanitary Equipment installed in mill homes provides the comfort and refinement essential to healthy, contented inhabitants of unsewered mill villages.

It is complete and scientific in every respect—endorsed by health boards everywhere, because of the thorough and adequate manner in which it disposes of fecal matter immediately after discharge from the body. It affords the convenience of a city water toilet.

To insure an ample supply of reliable labor, every mill village in an unsewered area should be equipped with a Kaustine Chemical System, or Hydro Kaustine Septic Tanks. It is welfare work that returns big dividends.

Send for our catalog H, which shows how Kaustine equipment solves the problem of sanitation in unsewered areas, and provides the convenience that keeps men healthy and satisfied.

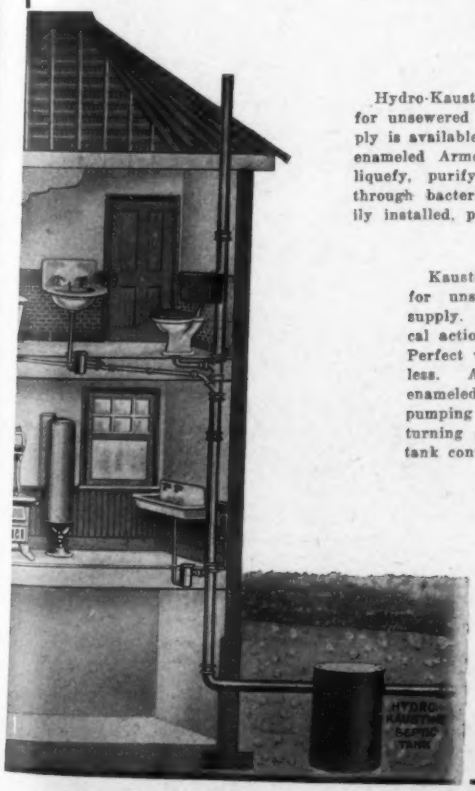
KAUSTINE COMPANY, Inc.

Manufacturers and Sanitation Engineers

Buffalo, N. Y. Toronto, Can. Melbourne, Aus.

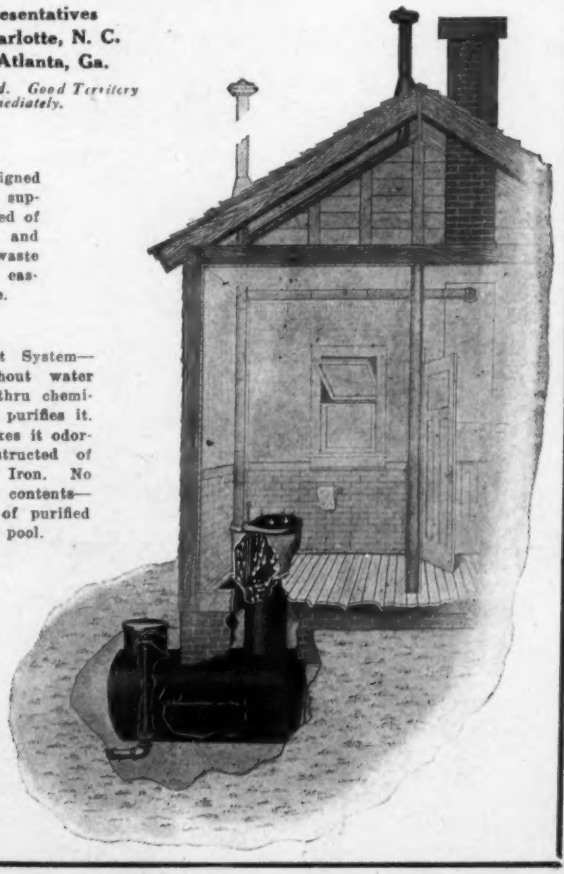
Southern Representatives
J. L. Murphy, Charlotte, N. C.
McKee & Son, Atlanta, Ga.

Representatives Wanted. Good Territory Open. Write Immediately.



Hydro-Kaustine Septic Tanks—designed for unsewered sections where water supply is available. They are constructed of enameled Armco (the pure) Iron, and liquefy, purify and disperse all waste through bacterial action. Odorless, easily installed, permanently serviceable.

Kaustine (Chemical) Toilet System—for unsewered sections without water supply. Disposes of sewage thru chemical action which liquefies and purifies it. Perfect ventilation system makes it odorless. All metal parts constructed of enameled Armco (the pure) Iron. No pumping or dipping of tank contents—turning drain valve disposes of purified tank contents through leaching pool.



Leatheroid
MILL RECEPTACLES

The Truly Permanent Fibre Cars

Leatheroid No. 3 All Fibre Car. Solidly Built. All wearing surface protected.

Leatheroid cars, as all Leatheroid receptacles, are made of "Leatheroid"—the most durable and toughest, smooth fibre known, and the other parts are chosen with care, and put together right.

Leatheroid Cars stand the heaviest loads and roughest usage day after day, year after year, and then show very little effects of wear.

Leatheroid Cars, Roving Cans, Boxes, Baskets, etc., are made in all sizes and shapes.

Sold by Leading Southern Mill Supply Houses.

Rogers Fibre Company
Leatheroid Sales Division
1024 Filbert Street, Philadelphia

Leatheroid No. 2 Steel-Clad Car. Nothing Equals it for Construction, Finish and Serviceability.

MAKE
THE AIR PLEASANT IN YOUR MILL

Improving the working conditions in your mill means better work—greater output—less time lost—

Fredisco

HUMIDO OIL "SOLUBLE"

Is made from Pure Steam Distilled Pine Oil

1 to 2 quarts a day in your Humidifier System will give the air a clean Pine Odor.

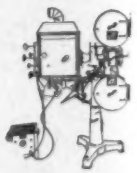
It is stimulating. Has no gum or rosin in it.

Write for sample—if you are not using it.

Manufactured Only by

Frederick Disinfectant Co.
Manufacturing Chemists
ATLANTA, GA.

Simplex
PROJECTORS



ARE THE TYPE MOVING PICTURE MACHINE TO BE FOUND IN THE WORLD'S FINEST THEATRES, SCHOOLS, CHURCHES AND INDUSTRIAL PLANTS—IF YOU CONTEMPLATE INSTALLING PICTURES IN YOUR RECREATION HALL IT WILL BE TO YOUR ADVANTAGE TO LET US FIGURE WITH YOU—REMEMBER! WE CARRY A GIGANTIC STOCK OF MACHINES, SCREENS, CHAIRS AND EVERYTHING PERTAINING TO THE THEATRE, SCHOOL OR AUDITORIUM. WRITE FOR COMPLETE CATALOGUE AND DETAILED INFORMATION. WE EMPLOY A CORPS OF EXPERTS AND ARE AT YOUR SERVICE—MANY YEARS OF SUCCESSFUL OPERATION THROUGHOUT THE COUNTRY HAS BEEN ENJOYED BY THIS COMPANY.

SOLE SOUTHERN DISTRIBUTORS Simplex TRADE MARK PAT'D PROJECTORS

THEATRE ACCESSORIES
LUCAS THEATRE SUPPLY COMPANY
ATLANTA, - GEORGIA

"AMERICA'S GREATEST INDEPENDENT MOTION PICTURE MAIL ORDER HOUSE"

BIG BUSINESS

AND THE WAY TO IT!

BIG business has long since recognized that the employee is a very important factor in success and that good health and contentment among employees makes for Greater Efficiency—Speeds up Production—Produces a Smoothly-running organization.

LUNCH ROOM

Lunch rooms for employees have proven in every instance to be a great step in the direction of an operating force that is always "on the job," frictionless, reducing mistakes, eliminating waste and preventing loss of time.

Permit us the opportunity of taking this matter up with you further and let us help you solve some of your biggest problems by installing a cafeteria or a lunch room in your factory for your employees. We are prepared to furnish you without obligation on your part practical blueprint layout of your kitchen and dining room showing complete installation of a modern, up-to-date, sanitary cafeteria or lunch room. We are prepared to make immediate shipments of all equipment from our stock in Atlanta.

Write for our 300-Page fully Illustrated Catalogue.

The WRIGHT goods, the WRIGHT price, the WRIGHT service.

THE WRIGHT CO., Inc.,

Importers and Jobbers

Hotel, Restaurants and Institution Equipment

185 Peachtree Street. ATLANTA, GA.

Wright GOODS-PRICES-SERVICE

Modern Playgrounds Better Communities

Leading industrial concerns recognize the value of the playground, not only to their community, but to their institution as well. Add to the health and happiness of an employe's growing children, and you give to that employe an added happiness and contentment that he carries with him to his work. You promote loyalty, good will and genuine interest.

MEDART
PLAYGROUND EQUIPMENT

For 50 years the Medart Company has been manufacturing and perfecting gymnasium apparatus for vigorous men—an experience that has especially fitted it for the leadership it has always maintained in the development of playground equipment best suited to promote those bodily and mental qualities which mold today's childhood into tomorrow's man- and womanhood.

Send for Catalog "L."

Catalog "L" fully describes Medart Playground, Swimming Pool, Gymnasium and Locker Room Equipment. Contains valuable suggestions for playground installations. It will be sent gladly to anyone requesting it.

Fred Medart Manf'g. Co.

Potomac & DeKalb Sts.

St. Louis, Mo.

Gordon Lewis, District Manager, Walton Bldg., Atlanta, Ga.

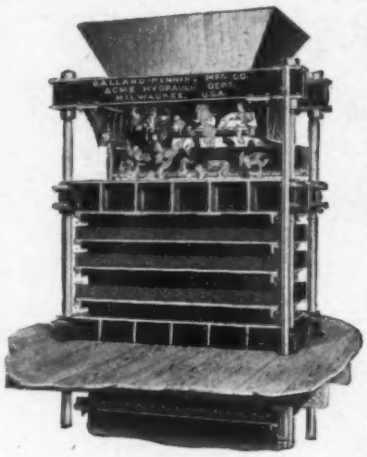
R-S SANITARY FOUNTAINS

One of the greatest sources of and aids in the spreading of disease is the drinking fountain, public or private, if the water jet is vertical. SCIENCE has PROVEN this as an indisputable fact by actual tests. It's NOT A THEORY. The vertical stream falls back into the fountain head germ-laden from the drinker's mouth to be carried to the mouth of the next drinker. "VERTICO-SLANT" STREAM FOUNTAINS have been especially designed to do away with this menace by jetting water at an angle that does not permit it to fall back to the fountain head.

OUR FOUNTAIN EQUIPMENT IS SIMPLE YET ABSOLUTELY SANITARY

Let Us Tell You. Write for our new 74-page catalog.

Rundle-Spence Manufacturing Co.
Milwaukee, Wis.



Acme Doorless Baler

Patents Pending

Load 50 000 lbs. in Car.

This is what can be accomplished with these powerful Balers and it is not necessary to pile the bales but merely set them on end.

LESS LABOR
MORE RAPID
LESS FLOOR SPACE

Send for catalog.

Galland-Henning Mfg. Co.
Milwaukee, Wis.

Southern Sales Representatives
THE LOVINGOOD COMPANY
Atlanta, Ga.

VOGEL PATENTED

OVER 350,000 *Giving*

FROST PROOF CLOSETS

Satisfaction in All Climates

They require no pit.
They save water.

All bowls have enameled rims. In service daily, winter and summer.

No. 1

The ideal water closets for Factories and Mill Villages, where thousands have been installed.

The most durable water closets made — excepting none.

Every Fixture Tested Under Hydraulic Pressure Before Leaving Factory.

INSIST ON GETTING THE VOGEL

Ask your jobber

JOSEPH A. VOGEL CO.

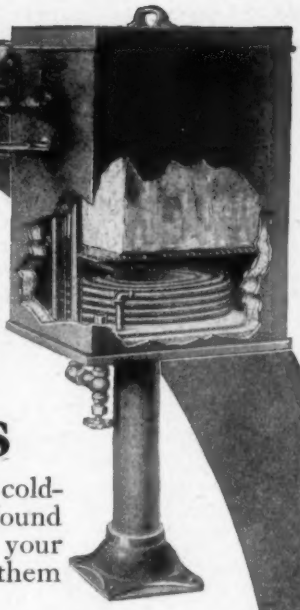
Factory and Office at
WILMINGTON, DEL.

VOGEL PATENTED

No. 5 FACTORY CLOSET

This fixture fills the demand for a strong and durable automatic water saving closet outfit for factory use. The valve device is extremely simple and repairs, though seldom necessary, can be made by removing the valve cap back of bowl.

Stimulate Production With Properly Cooled Drinking Water



Jewett Water Coolers *do* stimulate production during the hot, sultry summer months. This is proved by the number of leading industries that are keeping production at normal with their aid.

The *square* design of Jewett Coolers makes possible economy in time and money. With other coolers time is wasted cracking ice to pack them. With the Jewett the ice is put in in solid cake form and lasts longer.

Jewett Water Coolers

save ice. The thick, all-cork insulation makes the cooler absolutely cold-tight. Many feet of coiled pipe give greater cooling capacity than found in ordinary coolers. Jewett Water Coolers are sanitary and afford your employees clean, inviting water *at just the proper temperature* to refresh them during the hottest weather.

Install Jewett Water Coolers in your plant and avoid the usual summer let-down in production. You will get many interesting and valuable facts and figures from our folders on Jewett Water Coolers. Write for them to-day.

THE JEWETT REFRIGERATOR COMPANY

23 Chandler Street *Established in 1849* **Buffalo, N. Y.**

Keep the Employes You Have

GIVE THEM THE CONVENIENCES THEY WANT

HERE is one way to hold employees, and make them more contented and healthy also.

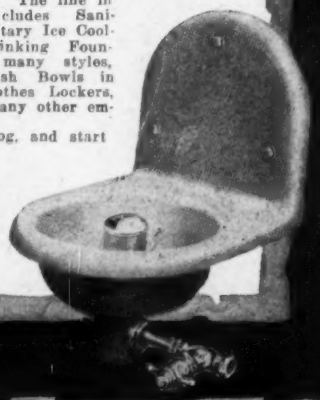
They appreciate every little piece of equipment you install for their convenience, and it's certainly not an expense, but a good investment, to install this

MEECO Metal Equipment For Shop And Factory

SANITARY EQUIPMENT

The line includes Sanitary Ice Cooled Drinking Fountains in many styles, Sanitary Wash Bowls in Batteries, Metal Clothes Lockers, Sanitary Toilets, and many other employee-keeping fixtures.

Write today for the complete catalog, and start today to solve your labor problem.



Manufacturing Equipment & Engineering Company

136 Federal St. Boston, Mass.
Address all communications to
FRAMINGHAM, MASS.

LABOR-SAVING DEVICES

FOR THE

Shipping Room

—Series No. 6—

STENCIL-BOARD

Did you know that certain grades of stencil board dull and injure dies and punches? Why not purchase from us the kind of board you should use at the same or lower price? We carry five different styles in stock at all times and furnish you with proper size for any model stencil machine you may be using. Write for samples and prices.

INDELIBLE STENCIL INK

Ready for instant use and guaranteed to give perfect satisfaction. Put up in 1, 2, 5 and 10 gal. cans. Price Low—Quality High.

IMPROVED FOUNTAIN BRUSH

Extra Tip

Price Complete $3.00 each
Extra Tips, each, 85 cents

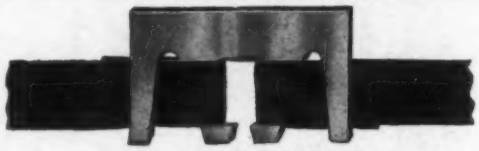
Made of brass heavily nickeled.

ADDRESS SUPPLY DEPARTMENT

J. R. Regnas & Co.

10-14 TIFT STREET

ATLANTA, GA.



Acme No. 9 Bale Buckle

ACME

Cold Rolled Bale Ties

USED WITH

Acme Bale Buckles

OR

Acme Seals

MAKE

Better Bales

Acme Steel Goods Company

ATLANTA, 10-14 TIFT STREET
BROOKLYN, 167 41st STREET
CHICAGO, 2840 ARCHER AVENUE

Acme Nailless Strapping with Seal applied

THE SAFE WAY

is to specify

"The Standard" SCALES

In buying scales you must first be assured that they are ACCURATE—accurate not merely for a month or so after they are installed, but for their entire life.

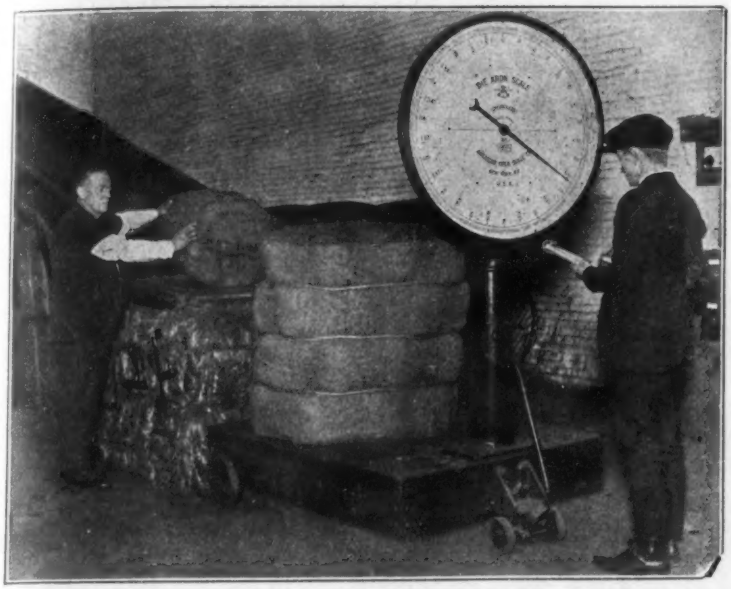
The safe way is to specify "The Standard" Scale—accuracy is **built** into them—accuracy in materials, in workmanship, in design and in the patented features. Many scales are accurate for a time, but it takes "THE STANDARD" strength and ruggedness to back up that accuracy and maintain it throughout its life.

"THE STANDARD" is made in models weighing from an ounce to carload weight. There's a size and style to meet every requirement you might think of. Catalog 85 contains many helpful suggestions and describes many styles and sizes. Write for it.

The Standard Scale & Supply Company

PITTSBURGH, 1631 Liberty Ave.
NEW YORK
PHILADELPHIA
CHICAGO
CLEVELAND
BALTIMORE
DALLAS

Automatic Weighing



This picture shows a Kron Automatic Scale, Portable Type, in the plant of a large cordage company.

Save
Time—Labor—Money
by installing
"Load and Look"
Kron Scales

AUTOMATIC Made in U. S. **SPRINGLESS**
All Metal Construction

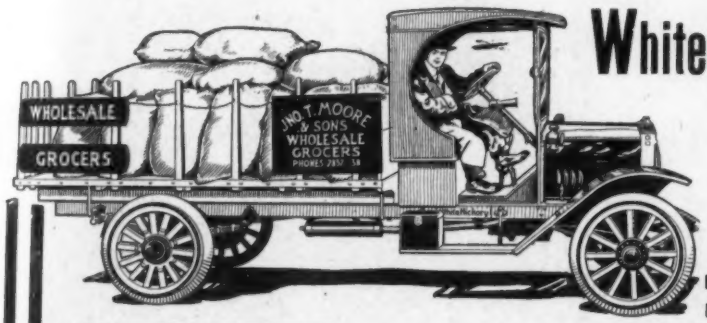
There's a Kron for Every Weighing Purpose

ALL TYPES—ANY CAPACITY—Dormant or Portable, Hanging Pan Types, Overhead Truck Scales, Suspension Crane Scales, etc.

Write for copy of our new catalog.

American Kron Scale Co.
422 East 53rd St., New York

Branch Offices and Service Stations in Principal Cities
CANADIAN KRON SCALE CO., MONTREAL, CAN.



White Hickory Motor Trucks
The Utmost in Service

These units assure dogged endurance.

Continental Red Seal Motor, Eisemann High Tension Magneto, Sheldon or Timken Worm Drive Axles, Timken Bearings and all other units of highest standard grade.

Power - - Endurance - - Flexibility - - Rugged overstrength of all parts that carry hardest strains, make the White Hickory Truck adaptable for your hauling requirements.

White Hickory Motor Trucks are built in Atlanta, thus giving users Factory Service of the highest type, available within 24 hours.

Let the forty year record of the White Hickory Wagon be your assurance of the steadfast dependability of The White Hickory Truck.
We will gladly help you select the right Truck for your business.

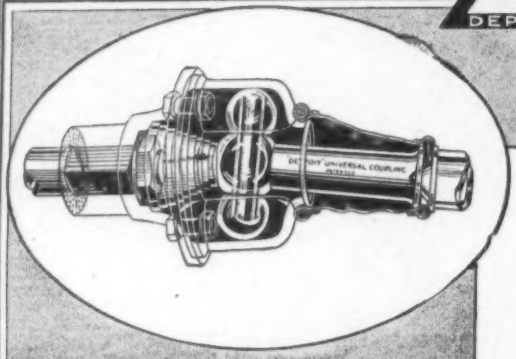
White Hickory Motor Corporation
ATLANTA, GEORGIA

TRI-ANGLE

POWER SERVICE MOTOR TRUCK DEPENDABILITY

A Three-Fold Value

¾ · 1½ · 2 Special & 2½ Ton Models



Destructive End Thrust

is entirely eliminated from the TRIANGLE 2-piece line shaft.

When the rear driving wheels rebound on hitting an obstruction, a line-shaft end thrust sometimes develops which means thousands of pounds end-pressure. This plays havoc with universal joints, and rear axle and transmission bearings.

The TRIANGLE shaft "floats" between Universal Joints having slotted races, and the possible end-thrust exerted is less than one pound.

Long life and dependable service to the TRIANGLE user are the results.

Your territory may still be open. Address or write Dept. Z

Eastern Representatives
TRIANGLE MOTOR SALES CO.
381 Fourth Ave. New York City

New England Distributors
Eugene F. Lally and Sons Co.
Boston, Mass.

TRIANGLE MOTOR TRUCK COMPANY
St. Johns, Michigan

Efficient Conveying and Storage Equipment Will Cut Down Your Labor Costs.

Several years of specializing on conveying and storage equipment for cotton mills enable us to solve your problems in an intelligent way, to suggest the most efficient equipment for the work you have to do.

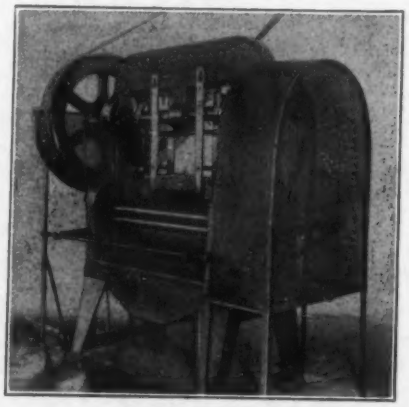
Without obligation on your part, one of our representatives will be glad to call and tell you frankly what our equipment can do for you.

REPRESENTATIVES FOR
Economy Engineering Co., Tiering Machines.
Automatic Transportation Co., Storage Battery Trucks.
Barrett-Cravens Co., Lifting Platform Trucks.
Standard Conveyor Co., Gravity and Spiral Conveyors.
Berger Mfg. Co., Steel Lockers and Bins.

"Serving Southern Concerns"

J. D. COLLINS,
9th Floor, Grant Building, ATLANTA, GA.

Beckley Perforating Co.
14 North Ave.
Garwood, N. J.



STEEL surfacing for sand rolls, Drying machines and ovens, Copper and brass centrifugal liners, Sheet steel for machinery guards, Steel vats, Kettles and Tanks, electrically welded.

SOUTHERN AGENTS
WILSON COMPANY, GREENVILLE, S. C.

"NOW I CAN SEE WITHOUT THEM"

HAMPDEN *SUNRAY* MILL WHITE OIL PAINT HELPS EYES TO SEE

IN every mill there are workers whose imperfect eyesight operates like a brake on speed and production.

Walls coated with Hampden *Sunray* Mill White Oil Paint gather and diffuse a very high percentage of light, thus making it easier for those of poorer eyesight to keep pace on production.

Hampden *Sunray* Mill White forms a tough, elastic surface that is snow white, smooth as tile—and Washable.

Send for particulars of Hampden *Sunray* Mill White users in the Textile Industry

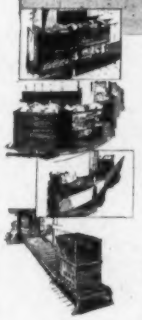
Deliveries direct from the Factory or from Local Dealers

HAMPDEN PAINT & CHEMICAL CO.

Good Paint Makers for over 67 years

Division E, Springfield Massachusetts

Hampden SUNRAY MILL WHITE



New Hampshire's finest mill is finished

Indian Head sheetings will be produced in this daylight-flooded modern mill. The entire output of the Jackson Mills at Nashua, N. H., was formerly produced in old type buildings. Scattered departments caused inconvenience. Good judgment urged partial rebuilding. Certain original buildings were made suitable for flannel manufacturing and storage of goods.

The picker room is on the sixth floor of the new mill. The card room is divided between the fourth and the fifth floors. Work passes to the middle of the mill, where roving frames are located. All departments are planned to provide the best unit of work per hand, without wasted effort. Lockwood, Greene & Co., as Manager Engineers, in consultation with the mill staff, arranged the layouts, originated building plans and directed construction.

A central heating, ventilating and humidifying plant serves all parts. Individual motors drive the pickers, warp frames and looms. Efficient conveyors store and distribute stock in process. Provision is made for future expansion, for this is a typical illustration of "Building with Foresight," the Lockwood, Greene method.

BUILDING WITH FORESIGHT

Correspondence is invited on any feature of textile manufacture.

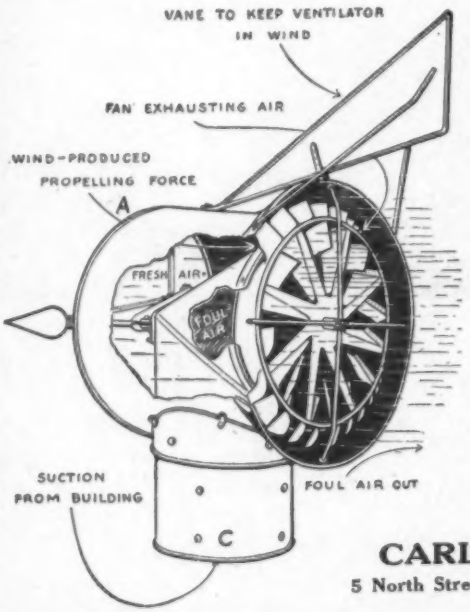
LOCKWOOD, GREENE & CO.
ENGINEERS

EXECUTIVE OFFICE, 60 FEDERAL STREET, BOSTON

BOSTON, 245 STATE ST. ATLANTA, HEALEY BUILDING
NEW YORK, 101 PARK AVE. CHICAGO, 38 S. DEARBORN ST.
DETROIT, 45 WASHINGTON BLVD. HARTFORD, 27 LEWIS ST.
CLEVELAND, 417 BANGOR BUILDING
LOCKWOOD, GREENE & CO. OF CANADA, LTD., 285 BEAVER HALL HILL MONTREAL
COMPAGNIE LOCKWOOD, GREENE, 47 AVE. DE L'OPERA, PARIS, FRANCE

The Wind Mill Principle Applied to a Ventilator

Note the illustration! The fresh air passing over the funnel comes in contact with the small outer blades, thereby propelling the wheel to which the large inner blades are also attached. These revolving inner blades create a vacuum which sucks the foul air from below. Perfectly simple—like so many of the world's ingenious inventions. The



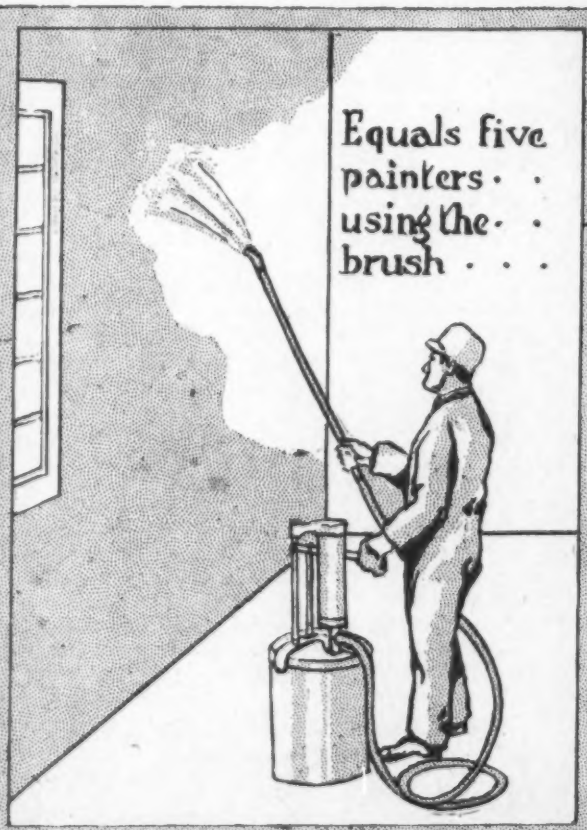
Carlisle Force-Draft Ventilator

displaces from 5 to 6 times as much air as ordinary ventilators. You can replace your present inefficient Ventilators with fewer and smaller-sized "Carlisles" and get more ventilation!

Write for descriptive folders.

CARLISLE & GALE CO.

5 North Street Cambridge, Mass.



SPRAYLITE
An Oil Paint

Applied With A Hand Spray

Use the only oil paint that can be applied with a hand spray, "SPRAYLITE," to give your workmen the advantage of more light. Make your walls of a whiteness that will almost equal the brightness of the sun and leave no dark corners or shadows. This method will actually mean an increase in production,—decrease light bills and bring greater efficiency.

SERVICEABLE AND SANITARY

An oil paint that goes on as easy as water paint and will last for years. It can be washed at will, something cold water paint will not stand up under. It is made from the best materials yet the price has been kept down. Manufacturers who firmly believe in economy, cleanliness and healthful working conditions are constantly making a demand for "SPRAYLITE."

Write today for full information and prices.

The Excello Manufacturing Co.

1836 Euclid Avenue
CLEVELAND, OHIO, U. S. A.

COOLEDGE HYGRADE

C THE CH LINE H

"Best for the Southern Climate"

C-H Bungalow Shingle Stains
For Shingle roofs and weather-boarding

C-H Home Paints
For Exterior and Interior Use

C-H Perma White
Interior gloss mill paint

Let us Send Booklet and Color Card Also names of Mills and Mill Contractors that have used our paints

"IMMEDIATE SHIPMENTS"

Just write on your letter-head— "Send Your Catalog"

F. J. COOLEDGE AND SONS
ATLANTA GA. SAVANNAH

Manufacturers of paints, stains and varnishes
Jobbers of window and building glass, and wallboard

AGASCO PAINTS

Number Nineteen preserves exposed metal surfaces against ravages of the seasons; contains no water, ammonia, or tar acids.

Number Fifteen, penetrative and germicidal, does the same for wood surfaces.

Number Three, Damp Proof, protects foundation walls; seals them against seepage.

Roof Coating Number One for felt, rubber or composition roofing; increases resistance against elements.

AGASCO Creosotes, wood-preservative: Number Seven, dark brown stain; Number Ten, crude; Number Eleven, clear, color to be added by you.

AGASCO ROOFING FELT
AGASCO ROOFING PITCH

ATLANTA GAS LIGHT Co
ROOM 235, 20 FAIRLIE STREET

Put Daylight on the Job

DAYLIGHT is a panacea for many business ills. Make it work for you from whistle to whistle. Paint the interior of your plant with Dixielite, the original daylight saver.

It helps speed up production; first, by making all work easier to see; second, by eliminating those mistakes due to dark working conditions.

Light tends toward cheerfulness. Dixielite goes far towards keeping your employees happy and contented; and contentment has an actual dollar and cents value to your organization.

DIXIELITE

The Original Daylight Saver

It is the perfect white finish for walls and ceilings of mills, factories, and warehouses. Once applied, Dixielite spreads daylight evenly and brilliantly to every corner of the room. As long as there is light outside, Dixielite works inside. It lowers electric bills. It makes a place more sanitary. It saves the eyes of your workmen. Dixielite is made in gloss, semi-gloss, and flat finishes. Let us send you a sample.

Bay State Liquid Paints answer every painting question. There is a paint, stain, varnish or enamel for every conceivable purpose. INOROUT, the all-round varnish is equally superior on inside or outside jobs. It can't be beaten.

THE BAY STATER

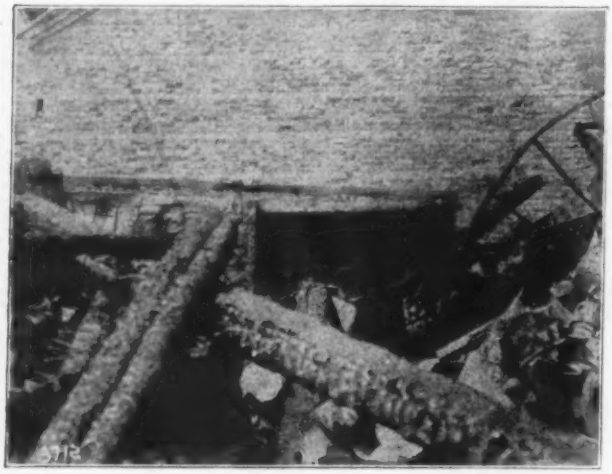
WADSWORTH, HOWLAND & CO., INC.
Paint and Varnish Makers
BOSTON, MASS. New York Office, Architects' Bldg. Philadelphia Office, 1524 Chestnut St.

W. A. WILLIAMS, Southern Representative
P. O. Box 322 Greenville, South Carolina

Be There When Fire Starts In Your Plant

THINK of the disaster to your property and your business that can be averted by your being present at the instant the fire starts.

OF COURSE you can not personally be in two places at one time—but you can have your personal representative there, day and night—a representative with a record of having saved from fire, millions of dollars worth of property—



Its companion put out of commission by castings piled against it by careless workmen, this R-W Fire Door single handed stopped a raging conflagration and saved a paint shop valued at $1,500,000.00.

RICHARDS-WILCOX
Automatic Fire Door Equipment

Witness: The R-W Fire Door Equipment in the picture, which saved $1,500,000.00 worth of property on the other side of the wall shown, which would positively have been wiped out except for the presence of Richards-Wilcox Hardware protection.

Write for folder G F-17 which tells about other instances of property saved by R-W Fixtures.

Richards-Wilcox Mfg. Co.
A Hanger for any Door that Slides.
CHICAGO ST. LOUIS LOS ANGELES PHILADELPHIA — AURORA, ILLINOIS, U.S.A. — BOSTON NEW YORK MINNEAPOLIS SAN FRANCISCO — LONDON, ONT.

Creosoting Industrial Timbers Is ECONOMY

CARBO, FIRST GRADE REFINED CREOSOTE OIL

Meets all requirements of the United States Government Shipping Board Emergency Fleet Corporation, Specification G174-A-1 and the United States Railroad Administration, Specification R-828-A.

The cheapest sap wood timbers, especially sap wood pine shingles treated with this oil **will outlast the highest grade woods untreated.**

NUMBER ONE CRUDE CREOSOTE:

An economical wood preservative for open tank or brush treating wood shingle roofs, or structural timbers. This material when properly applied greatly lengthens the life of the cheaper timbers.

PURE CREOSOTE DISINFECTANTS COEFFICIETS ONE TO TWENTY.

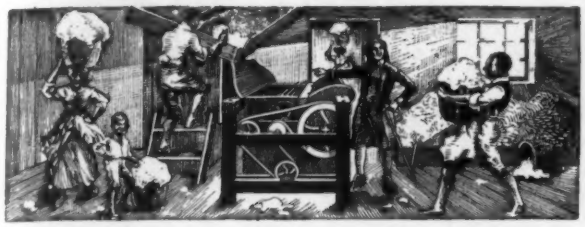
Each shipment tested by Ridell-Walker method and guaranteed as to carbolic strength.

Our standard disinfectants are free from sediment and tarry matter and upon dilution with water form rich, cream-like emulsions (no oily float on top nor deposit at bottom). Emulsions do not separate on standing.

Our disinfectants are manufactured by the largest Manufacturer of coal-tar products in America and are absolutely **uniform.**

Gulf States Creosoting Company
17 Sampson Street, ATLANTA, GA.

JEWELL LEATHER BELTING



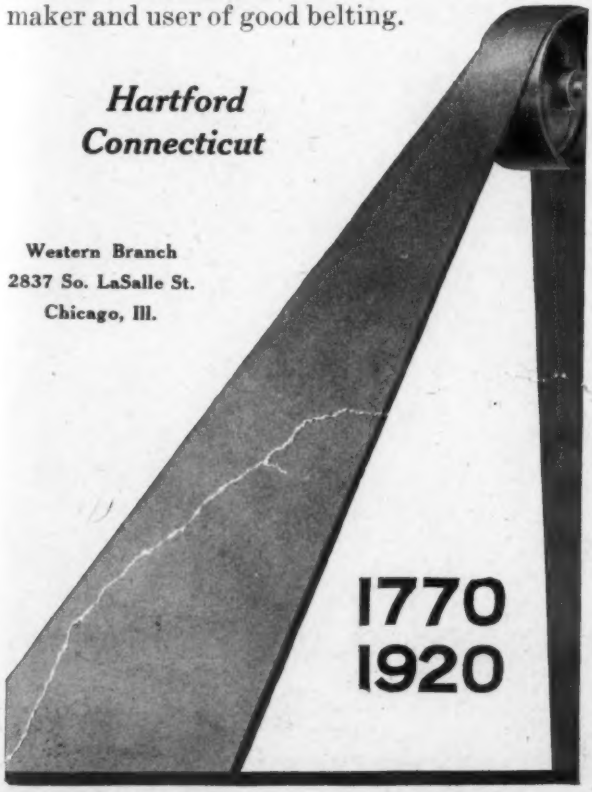
Jewell Leather was used for belting when in 1800 the first cotton gins were installed

The corporate personality of the Jewell Belting Company was fixed by law in 1882—

but its real personality has been fixed through its ability to solve, during 150 years, the human equation between maker and user of good belting.

Hartford
Connecticut

Western Branch
2837 So. LaSalle St.
Chicago, Ill.



They make Good Belts give Better SERVICE

They insure continuous production

They cut out waste of time, labor & Belting

They afford full power Transmission

© 1919

find out about

CRESCENT BELT FASTENERS

Write Dept. 58
CRESCENT BELT FASTENER COMPANY
383 Fourth Avenue, New York, U. S. A.

UNIFORMITY, Flexibility and Strength are the inseparable features of STANLEY SOLID WOVEN COTTON BELTING.

Uniformity means steady drive; flexibility, less slippage and more power transmitted with less tension. Stanley has more strength because it is solid woven, and has no plies or laps to come apart.

Stanley Belting withstands heat, oil and acids better than leather and rubber. That is why it is preferred in woolen and knitting mills, and in dye houses, bleacheries and finishing plants.

A sample will interest you.

STANLEY BELTING CORPORATION

36 South Clinton Street CHICAGO, ILL.

THE HURST COMPANY

208 Austell Bldg.

Atlanta, Ga.

We Manufacture

Paints that are Specially Adapted to the South Country.

Best Roof Paint,
Best Rubber Roofing Paint, and
Best Bridge and Metal Paints.

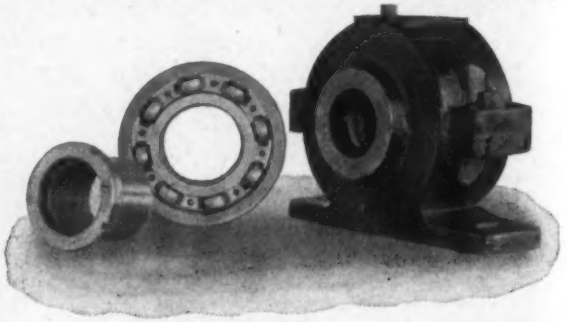
SATISFACTION GUARANTEED.

Also Rubber and Slate Surfaced Roofing.

Make your inquiries to us.

Prices Cheerfully Quoted.

The Bearing That Betters the Lap



Ball bearings on picker beaters save power, oil, time, labor, and material, and practically eliminate maintenance expense.

They permit absolutely exact and permanent adjustment of beaters, which means evener lap with a better selvedge.

They keep all the oil in the box and off of the lap. They eliminate the shutdowns caused by hot boxes. They will pay for themselves in less than two years.

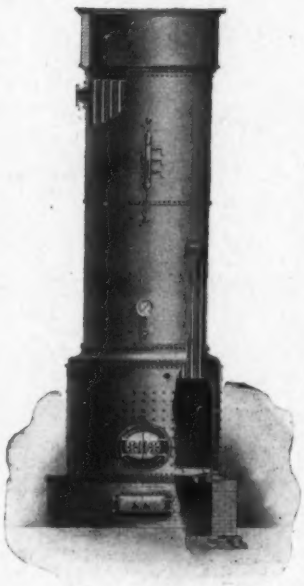
You either have them or need them. For information write to

ALDRICH MACHINE WORKS

Ball Bearings

Greenwood, South Carolina.

Combines All the Best Features of Vertical Tubular Boilers



The Vertical Tubular Boiler has long been the choice of many engineers, especially those in the New England States. With this type of boiler there is of course less floor space requirement, but perhaps the chief cause of the demand is due to the call for higher steam pressures and also to the increasing use of steam turbines requiring superheated steam for their economical operation.

We build vertical tubular boilers in the Straight Sheel Type and the Manning Type, both of which types are perfect to the last degree and are giving perfect satisfaction to engineers who prefer these types.

In the arrangement of heating surface, grate surface and passage of gases, we have embodied in our design proportions which practice has proven correct.

The illustration shows our Standard Manning Type. Provision is made for cleaning the crown sheet through a series of handholes arranged to come opposite alternating rows of tubes, so that it is possible to reach every part of the sheet.

Built to meet all the rigid requirements of the Massachusetts Board of Boiler Rules, and the ASME Code.

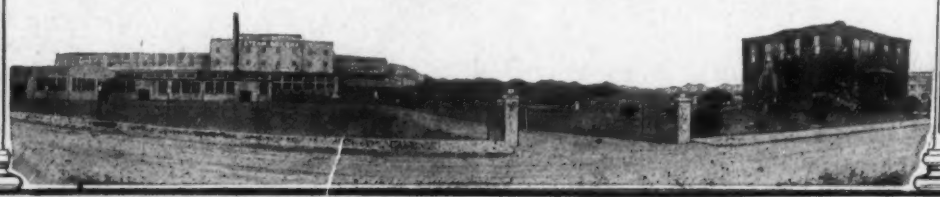
As to the high standard of material and construction, the reputation of our boilers in actual service speaks for itself.

Write today for full details.

INTERNATIONAL ENGINEERING WORKS, Inc.
FRAMINGHAM, MASS.

Southern Representative: Isaac Hardeman, Charlotte, N. C.

Boston New York Philadelphia Charlotte San Francisco



FULL AUTOMATIC, SEMI-AUTOMATIC and HAND OPERATED

Gear Cutting Machines!

Especially Adapted for Use in

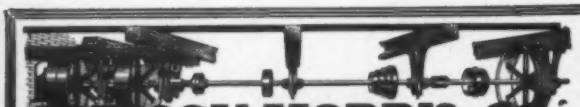
Cotton Mills.

Hundreds Now in Use.

Send for special circulars.

The D. E. Whiton Machine Company

New London, Conn.



CRESSON-MORRIS CO.

POWER TRANSMITTING MACHINERY

Merit Plus Recognition

"The heights by great men reached and kept were not attained by sudden flight."

Time, skill and effort must also proceed merit as surely in machinery as in men.

Time, skill and effort must also proceed merit in order to obtain and maintain for merit the recognition it deserves.

The great number of large installations of Cresson-Morris Power Transmitting Machinery is proof of both the merit and the recognition of the merit that nearly three score years of skill and effort have endowed it with.

The cumulative knowledge of all this experience is always available to you in the recommendations of our engineers.

CRESSON-MORRIS COMPANY

ENGINEERS—FOUNDERS—MACHINISTS

PHILADELPHIA, PENNA.

Branch Office 141 Milk St., Boston, Mass. 20

LANE'S UNIQUE RATCHET TOOLS

"OFF-SET" RATCHET SCREW DRIVER

This tool was designed for working in close quarters, where the work cannot be reached by a straight handled screw driver.

The Ratchet Features enables the operator to use this Tool in a very narrow space and at the same time secure a very great leverage.

The BITS are milled square at tips, thus securing a perfect fit in screw slots, which also prevents lifting out of the slots, as is the case with tapered tips.

The handle is 6 inches in length, drop-forged and case-hardened. Two accurately milled Bits, made from highest grade screw driver steel, are furnished with each Tool.

Packed in individual Paper box.
Weight, 5 ounces.

LIST PRICE $2.00

Sold by Jobbers Throughout the World.

Manufactured by

WILL B. LANE UNIQUE TOOL CO.

180 N. Dearborn St., CHICAGO, ILL.

A fitting that is stronger than the pipe

Elbow
3000 pounds pressure

Elbow
6000 pounds pressure

CRANE

FORGED STEEL

Screwed Elbows and Tees

These fittings are forged solid and then drilled and tapped for the required pipe size. Straight and reducing sizes can be furnished. Where a higher safety factor is desired we can furnish fittings made from larger blanks than regularly.

Recommendations:

For superheated steam;
Sizes ½-to 2½-inch—any existing pressure and temperature.

For extreme high pressure air lines;
Sizes ½- to 2½-inch—any existing pressure.

For ammonia and carbon dioxide lines;
Sizes ½- to 2½-inch—any existing pressure.

For Hydrostatic pressures;
Sizes ½- to 2½-inch—3,000 pounds pressure.
Sizes ¾- to 2 -inch—6,000 pounds pressure.

SALES OFFICES, WAREHOUSES AND SHOWROOMS:

BOSTON, SPRINGFIELD, BRIDGEPORT, ROCHESTER, NEW YORK, ALBANY, BROOKLYN, PHILADELPHIA, NEWARK, CAMDEN, BALTIMORE, WASHINGTON, SYRACUSE, BUFFALO, SAVANNAH, ATLANTA, KNOXVILLE, BIRMINGHAM, MEMPHIS, LITTLE ROCK, MUSKOGEE, TULSA, OKLAHOMA CITY, WICHITA, ST. LOUIS, KANSAS CITY, TERRE HAUTE, CINCINNATI, INDIANAPOLIS

FOUNDED BY R. T. CRANE, 1855

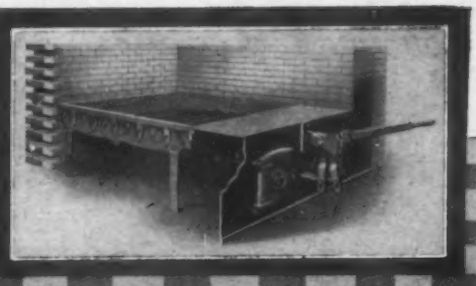
CRANE CO.
836 S. MICHIGAN AVE.
CHICAGO

WORKS: CHICAGO AND BRIDGEPORT

DETROIT, CHICAGO, ROCKFORD, OSHKOSH, GRAND RAPIDS, DAVENPORT, DES MOINES, OMAHA, SIOUX CITY, ST. PAUL, MINNEAPOLIS, DULUTH, FARGO, WATERTOWN, ABERDEEN, GREAT FALLS, BILLINGS, SPOKANE, SEATTLE, TACOMA, PORTLAND, POCATELLO, SALT LAKE CITY, OGDEN, SACRAMENTO, OAKLAND, SAN FRANCISCO, LOS ANGELES

CRANE LIMITED — MONTREAL, TORONTO, VANCOUVER, WINNIPEG, LONDON, ENG., SYDNEY, N. S. W., QUEBEC, HALIFAX, OTTAWA, CALGARY.

We are manufacturers of 20,000 articles—valves, pipe fittings, steam specialties, etc.—for all phases of power plant equipment, and are distributors of pipe and heating and plumbing materials.



AJAX GRATES

15% LESS COAL

Means many dollars saved every day of the year – and the AJAX will do better than this in most cases.
Our claims are based on results given in actual service over a long period of years.

Ajax will save coal – Save labor – Cut upkeep – and increase steam.

Our Booklet "The Economical Burning of Coal" will be mailed, without obligation, on request.

VALLEY IRON WORKS
WILLIAMSPORT, PA.
ESTABLISHED 1865

"VALLEIRON"

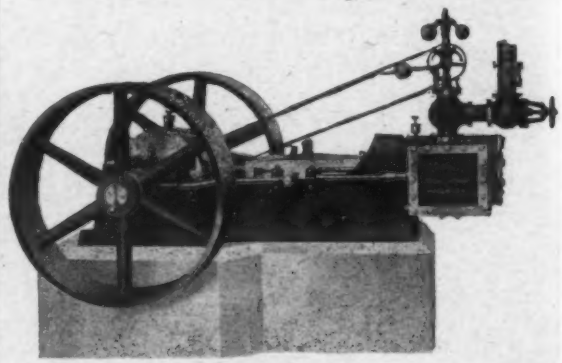
A New Addition to Our Service

We have just installed a complete Belting equipment to re-work your old Belts. This is a large saving to quantity users of Leather Belting. Let us demonstrate to you the value of this saving.

We carry a complete line of

TEXTILE and GENERAL MILL SUPPLIES

The Mill Supply Co., Inc.
Greenville, S. C.

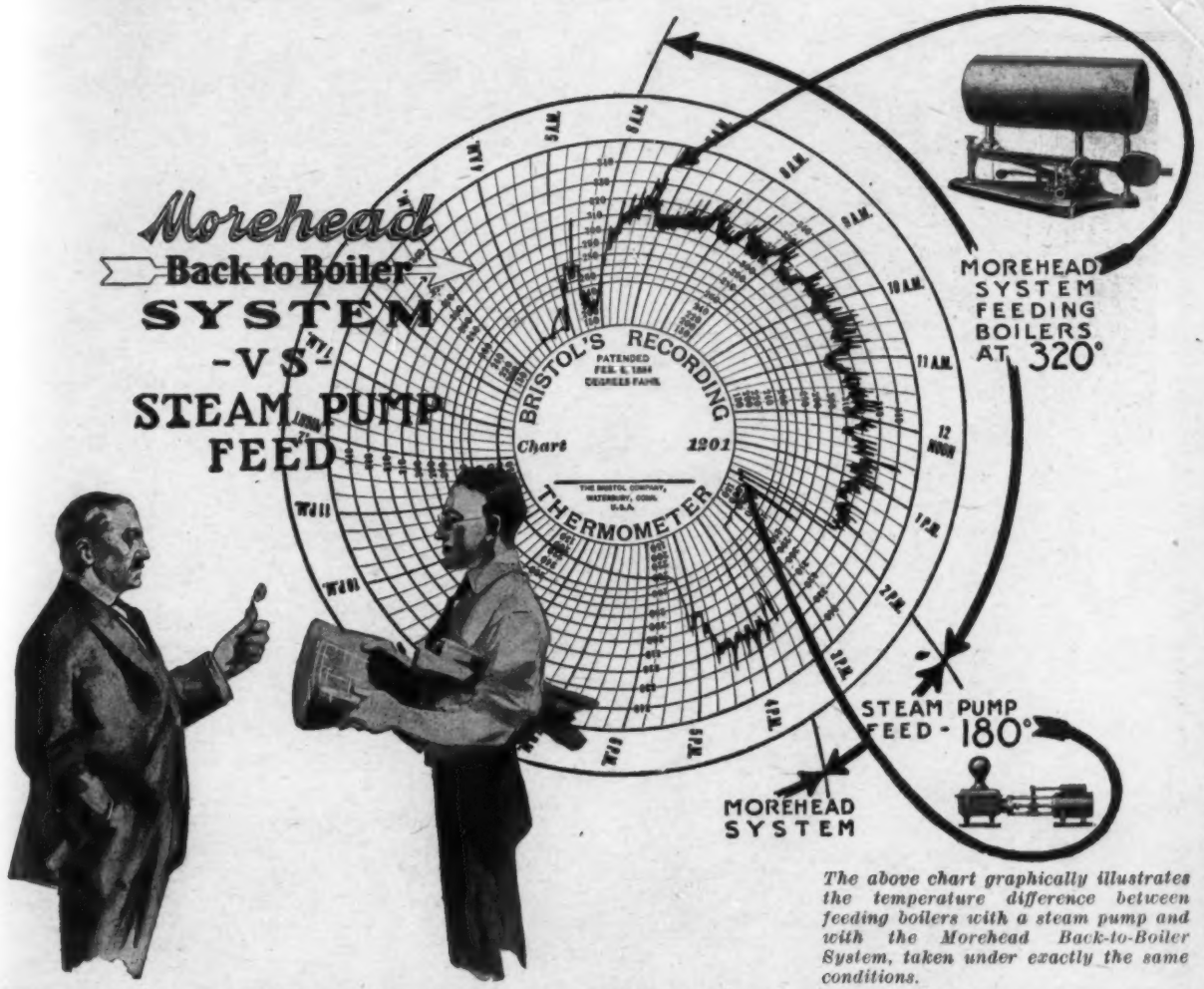


J. S. Schofield's Sons Co.
Macon, Georgia

MANUFACTURERS OF

High Pressure Return Tubular Boilers, High Grade Stationary Steam Engines, Tanks, Stacks, Stand Pipes.

Heavy Castings and Wrought Iron Works.



The above chart graphically illustrates the temperature difference between feeding boilers with a steam pump and with the Morehead Back-to-Boiler System, taken under exactly the same conditions.

Twentieth Century Steam Drainage and Boiler Feed

Textile Mills throughout the country are installing the Morehead Back-to-Boiler System because—

It improves the circulation of steam through steam heated machines.

It saves one per cent of fuel for every ten degrees increase in the temperature of feed water.

It pays for itself—often during the first few weeks.

Morehead engineers will be glad to explain in detail just how the Morehead System may be applied to reduce fuel expense in your plant. Write for our catalog and complete particulars.

Morehead Manufacturing Co.

DETROIT, MICHIGAN

Canadian Morehead Manufacturing Co., Woodstock, Ont.
For Dominion of Canada.

The "Morehead" Return Trap.

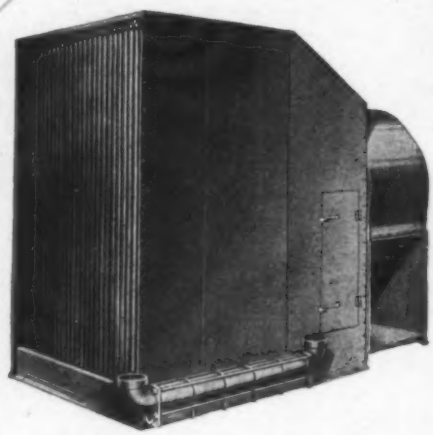
Positively Drains All Types of Steam Apparatus

Delivers Condensation And Feed Water to Boiler Under All Conditions at Maximum Temperature

Your Fuel Bills are Less

Morehead

"BACK-TO-BOILER-S[illegible]M"



Seri-Vane Fans

Cut shows a compact heating unit as regularly installed by us for large Factory and Industrial Heating and Ventilating units. The large range of adaptability for our fans, heaters, air washers, etc., is clearly brought out in catalog No. 70.

We have lately prepared a special treatise devoted to paper drying and kindred products which we think will prove of value to those manufacturers who desire to increase their production and the quality at the same time. Ask for Bulletin No. 11.

If we cannot truthfully show you where a SERI-VANE FAN can do your work better and save you money at the same time, we say so frankly. We do not try to force a sale but gladly make any suggestions or recommendations which our experience knows to be practical and feasible, and then allow the customer to decide freely from the facts presented. There is positively no string attached to our engineering advice.

HAVE YOU A FAN PROBLEM? IF SO, WRITE

The New York Blower Company

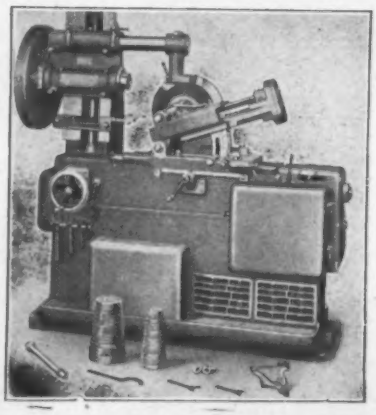
608 S. Dearborn Street **CHICAGO, ILLINOIS**

Branch Offices in Principal Cities

Machine Tools, General Mill and Machinery Supplies

THE WALRAVEN COMPANY

36-38 West Alabama Street Atlanta, Georgia



SINCE 1855 Brown & Sharpe have built Gear Cutting Machines. You will find them giving satisfactory service everywhere.
Whether it is for spur or bevel gears, large gears or small gears, there is a time-tried B & S Gear Cutting Machine to fill your need.
Brown & Sharpe machines are built up from foundry to inspection room with accuracy—accuracy for long service—the keynote of every operation.

Exclusive Southern Representatives for

BROWN & SHARPE
Milling Machines, Gear Cutting Machines, Grinders, Screw Machines, Etc.

HENDEY
Lathes, Shapers, Centering Machines

BULLARD
Boring and Turning Mills, Vertical Turret Lathes

DRESES
Radial Drills

GRAY
Planers

Let us quote you on your requirements
Our service is unexcelled

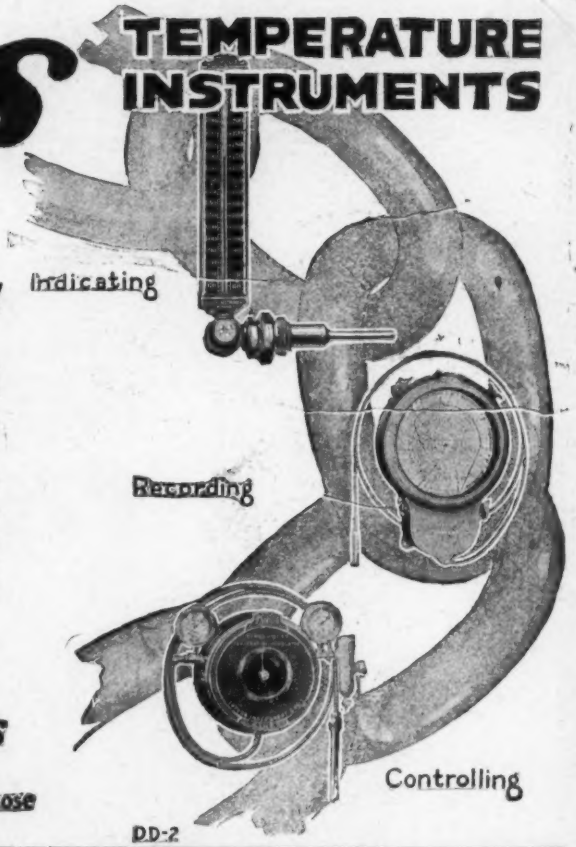
Tycos TEMPERATURE INSTRUMENTS

The Basic Factors of Industrial Control

IN practically all the process work of modern industry *Tycos* Indicating, Recording and Controlling Temperature Instruments are standard today.

A lifetime devoted to the solution of special temperature problems has resulted in the development of these instruments to a point of dependability and precision which has not been surpassed.

A request for information on Tycos Instruments will bring you complete data without obligation.



Taylor Instrument Companies
ROCHESTER N.Y.
There's a *Tycos* or *Taylor* Thermometer for Every Purpose

Jenkins Standard Iron Body Globe Valves

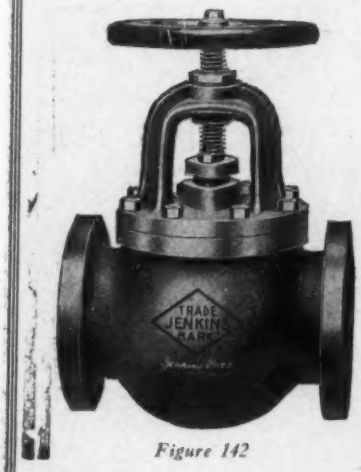


Figure 142

Also made in Angle, Cross Check, Y and other types. They are heavier and considerably stronger than most of the standard iron body valves. Regularly fitted with Jenkins Renewable Composition Discs. Wide yokes give easy access to the stuffing boxes which can be packed under full pressure when the valves are wide open. Raised Seat Rings are of high grade steam metal composition and can be removed and renewed. Suitable for 150 pound steam pressure.

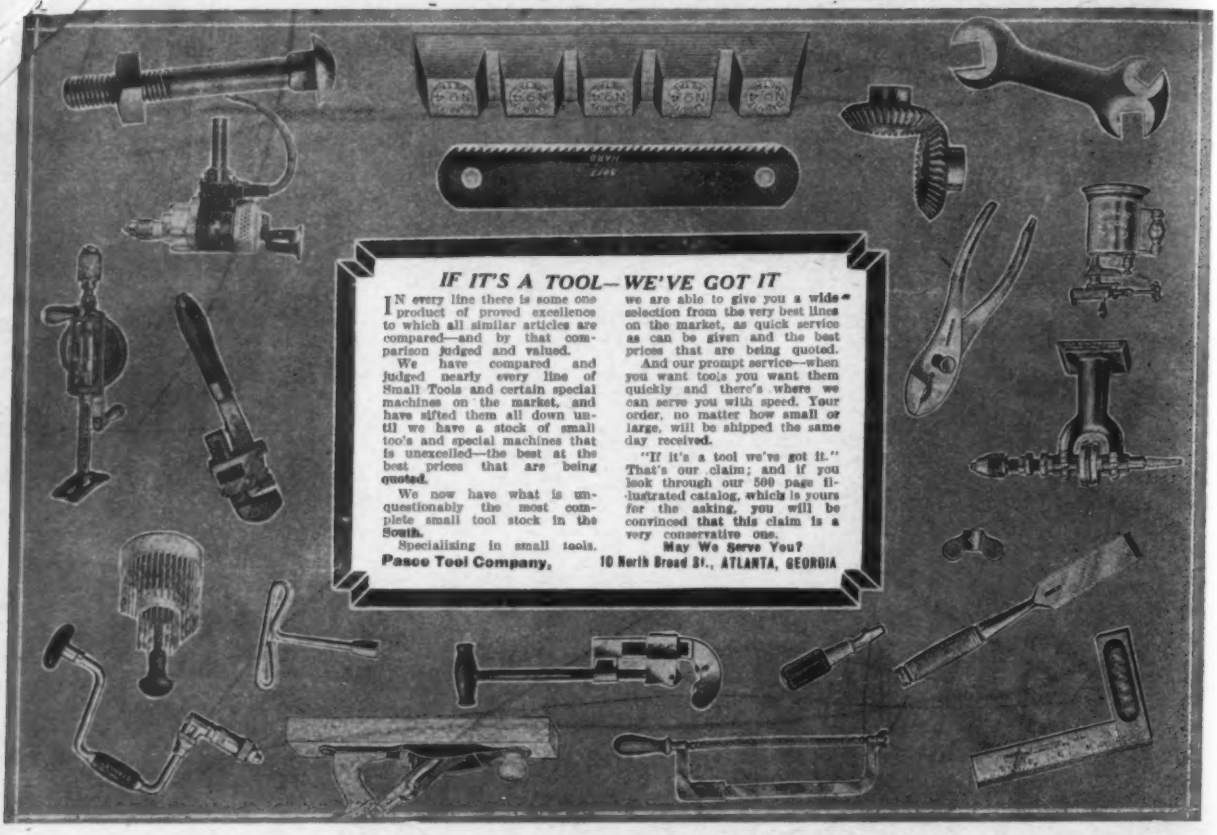
Know genuine Jenkins Valves by the name and the Jenkins "Diamond Mark"—obtain them through supply houses anywhere.

JENKINS BROS.

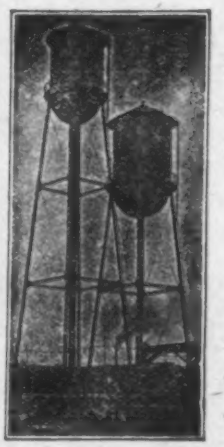
New York, Boston, Montreal | Chicago, St. Louis, London | San Francisco, Pittsburg, Havana | Philadelphia, Washington

2153-J

Jenkins Valves


IF IT'S A TOOL—WE'VE GOT IT
IN every line there is some one product of proved excellence to which all similar articles are compared—and by that comparison judged and valued.
We have compared and judged nearly every line of Small Tools and certain special machines on the market, and have sifted them all down until we have a stock of small too's and special machines that is unexcelled—the best at the best prices that are being quoted.
We now have what is unquestionably the most complete small tool stock in the South.
Specializing in small tools, we are able to give you a wide selection from the very best lines on the market, as quick service as can be given and the best prices that are being quoted.
And our prompt service—when you want tools you want them quickly and there's where we can serve you with speed. Your order, no matter how small or large, will be shipped the same day received.
"If it's a tool we've got it." That's our claim; and if you look through our 500 page illustrated catalog, which is yours for the asking, you will be convinced that this claim is a very conservative one.
May We Serve You?
Pasco Tool Company, 10 North Broad St., ATLANTA, GEORGIA

TOWERS and TANKS
That are Built Right



Boilers,
Structural
Steel Work

Sheet Steel
and Plate Work

Boiler Tubes
Castings,
Etc.

Tell us what you want and let us quote prices.

The Walsh & Weidner Boiler Co.
Chattanooga, Tenn.

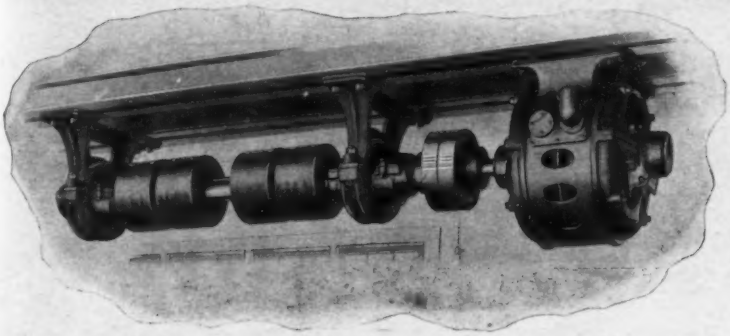
MACHINE TOOLS

Lathes, Drill Presses
Shapers, Planers
Electric Motors
Automatic Gear Cutters
Etc.

Everything for the Up-to-Date Machine Shop.

"Economy is buying wisely, not cheaply"

SEEGER MACHINE TOOL CO.
34 S. Forsyth St. Atlanta, Ga.



"Four Frame" Universal Spinning Frame Drive For the Electrification of Old Mills

With this new drive all pulleys are on one end and can be located to suit any spacing between frames. This makes it unnecessary to move the frames in the electrification of old mills.

The equipment consists of a special spinning frame motor for ceiling suspension equipped with conduit terminal box; bushing type flexible coupling; adjustable hangers; shaft with paper pulleys for driving four spinning frames.

Send for new textile bulletin No. 136 A.

ALLIS-CHALMERS PRODUCTS
Electrical Machinery
Steam Turbines
Steam Engines
Gas and Oil Engines
Hydraulic Turbines
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Mining Machinery

ALLIS-CHALMERS MANUFACTURING COMPANY
Milwaukee, Wisconsin, U. S. A.
District Offices in All Leading Cities

ALLIS-CHALMERS PRODUCTS
Flour and Saw Mill Machinery
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Pumping Engines-Centrifugal Pumps
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Condensers

Brazing—Oxy-Acetylene and Thermit

WELDING

Over ten years of practical experience in brazing and welding all kinds of machinery and equipment enables us to offer efficient service to the cotton and knitting mills.

Parts shipped to us welded and returned promptly.

Or wire us, and one of our first-class machinists and practical welders will come to your plant and weld your job for you.

Boiler Welding A Specialty

CHATTANOOGA BRAZING & WELDING CO.
1309 Chestnut St., Chattanooga, Tenn.

$5,000 Saved Here By Standard Service

The shaft that connected this big water turbine with the electric generator became worn at the stuffing box. The shaft was 19 feet long and 12 inches in diameter and became worn ⅝ of an inch in depth and about 9 inches long.

The question was whether they should get a new shaft which at that time would have cost them about $5,000.00 in addition to the cost of labor and transportation, or whether they should have the worn places built up.

They called on us and it required about ten days to put this shaft in first class condition at a cost to them of about $200.

We can supply such service as this, or supply you with a

Standard Welding and Cutting Machine

oxygen and supplies and also send an expert to your mill to teach your mechanics how to use it.

Write today for complete information.

STANDARD GAS PRODUCTS CO.
INCORPORATED.
Oxygen, Oxy-Acetylene Welding and Cutting Machines and Supplies.
Main Office Atlanta, Ga. **Savannah, Ga.** **Gretna, La.** **Chattanooga, Tenn.**

Speed in Service is Only Rivaled by Accuracy
Each Would Be Useless Without the Other

Unfailing Service

In the struggle and stress of modern business life every moment of delay represents a loss of time and money which cannot be regained.

When promptness, accuracy and dispatch are the vital elements in the delivery of electric equipment or supplies it is natural to turn to the Carter Electric Company for service.

This is an organization whose members are trained to meet the demands of any emergency and this organization is ready to serve you on an instant's notice.

If your requirements cover Rubber Conduit Wire, Switches, Safety Switches, Wiring Devices, Fuses, Lamps or other electric supplies, it is only a matter of a few hours before we can place them in your hands.

This is because our warehouses are always fully stocked—everything you may need and in large quantities—and with every modern facility for handling your business the Carter Electric Company pledges you **Unfailing Service.**

Carter Electric Company

63 Peachtree Street, Atlanta

BRYAN ELECTRIC CO.

58 EDGEWOOD AVENUE, ATLANTA, GA.

Electric Light, Power, Telephone and Bell Wiring for Residences, Stores and Factories Estimates Furnished.

Rewinding for Motors, Generators

All kinds of new and used Electrical Machinery bought, sold and exchanged.

ALL KINDS OF ELECTRICAL WORK

MOTORS RENTED **TELEPHONE YOUR WANTS**

Local and Long Distance Ivy 1788-1790.

APPROVED
ELECTRICAL FITTINGS

APRIL, 1920

Official Approval

Factory Mutual's Laboratories

Cartridge Type, Magazine Style.
Greeff Engineering & Mfg. Co., Newark, N. J., Multiple Electric Products Co., Inc., New York, N. Y., Sole Agents. "Atlas," 4 in 1 non-indicating. (0-100A., 250 and 600V.)
This manufacturer is prepared to refill Atlas fuses in all sizes including the ferrule type.

INSPECTION DEPARTMENT
Associated Factory
Mutual Fire Insurance Companies,
31 Milk Street, Boston, Mass.

Facsimile of the official listing, April, 1920

In addition to above, fuse is now approved 110 to 200 amp., 250 volts.

A fuse that is not merely sold to you, but maintained in service thereafter, at the lowest cost of any fuse so approved.

Send for samples, prices and comparative statement showing costs of all makes based on authentic laboratory tests. Give name of your electrical dealer or distributor.

Atlas

3 to 600 amp.; 250 to 600 volts

4-in-1 MULTIPLE FUSE

600-volt size, showing interior construction and patented silencer device.

Multiple Electric Products Co., Inc.
Sales Office: 450 Fourth Ave., New York

Quick Action

Modern business demands it. Time is the most valuable asset of the executive.

STROMBERG-CARLSON
INTER-COMMUNICATING SYSTEMS

add hours to the business day—eliminate loss of precious minutes—save endless unnecessary footsteps.

They are easily installed—require no switchboard or operator. Their operation is simplicity itself.

Push *ONE* Button *ONCE*—and Talk.

Dixie Electric Equipment Co.

INDUSTRIAL ELECTRICAL EQUIPMENT

Interior Telephones—Fire Alarm Apparatus.
Watchman's Clock Detectors.
Electric Clocks—Riot Alarms—Code Calling Systems.
A Southern Concern—Giving Service to the South.
Data and Complete Information on Request.

37 Peters St. Bell Phone Main 826.
ATLANTA, GA.

When you need fuses remember that

ECONOMY

renewable

FUSES

—were the first line using an inexpensive bare link for restoring a blown fuse to its original efficiency to be Approved *In All Capacities*—0 to 600 amperes in both 250 and 600 volts—by the Underwriters' Laboratories.

—bear the "Und. Lab. Inspected" label. Economy "Drop Out" Renewal Links are stamped with the "Inspected" symbol.

—long ago won public approval—evidenced by the fact that for many years millions of them have been giving dependable protection, high efficiency and working marked economies.

—cut annual operating costs 80% as compared with the use of one-time fuses.

—are used wherever efficiency and economy are chief considerations—in steel mills, manufacturing plants of all kinds, buildings, and in every branch of industry.

—are used wherever safety is the prime consideration—in powder mills, hospitals, schools and the United States Navy.

—are absolutely accurately rated, made of the best materials and by the most skilled and careful workmen obtainable.

—are sold by all leading electrical jobbers and dealers.

Insist on getting Economy renewable Fuses.

Economy Fuse & Mfg. Co.

Chicago **U. S. A.**

Economy Fuses also are made in Canada at Montreal.

SOUTHERN BUSINESS DIRECTORY

AUDITORS

G. L. LEMON AND COMPANY

CERTIFIED PUBLIC ACCOUNTANTS

ATLANTA—901 Healey Building, Phone Ivy 4754
BIRMINGHAM—1702 American Trust Bldg., Phone Main 1024
CHATTANOOGA—822 Hamilton Nat. Bk. Bldg., Phone Main 1559.

OUR SPECIALTIES

Income Tax Matters—Cost Accounting—Cotton Mills —Municipal and County Audits—Systematizing.

WELDING & REPAIRS

SOUTHERN WELDING & MACHINE CO.

190 COURTLAND STREET ATLANTA, GA.

Gear Cutting and Machine Work.
No job too large or too small for us.
We specialize in cotton mill and oil mill welding and machine work.
Oxy-Acetylene and Electric Welding

SUPPLIES, MISC.

STENCILS — METAL CHECKS — RUBBER STAMPS

Send for Catalogue
Stencil Work for Cotton Mills Our Specialty

SOUTHERN STAMP & STENCIL CO.

7 W. Mitchell St.
ATLANTA
GA.

Dairy Supplies & Equipment

Leading Dairy Supply House of the South
(Established 1895)
Write Dept. E for new catalog and free "Dairy Hnad Book."
"PROMPT SERVICE" IS OUR MOTTO
Dairy & Farm Supply Co.
Atlanta, Ga.

COTTON, WASTE, LINTERS, Etc.

International Cotton Products Company

15th floor Hurt Bldg.,
ATLANTA, GA.

Branches:
Philadelphia, Pa.
Charlotte, N. C.

Warehouses:
Roseland, Ga.

COTTON COTTON WASTE LINTERS

E. A. CUTTS C. S. CUTTS, SR.

E. A. CUTTS COMPANY

Cable Address: "CUTTS"
COTTON BROKERS
30 Bay Street, East
Savannah, Ga.
Office Phones—478—2713—Postal Phone
Long Distance—9929
Branch Office: E. A. CUTTS & SON, Augusta, Ga.

CONSTRUCTION

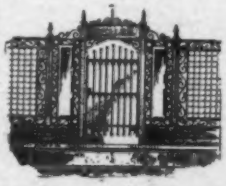
Cast Iron Columns

FOR

COTTON MILL CONSTRUCTION

American Cast Iron Pipe Company

COLUMN DEPARTMENT BIRMINGHAM, ALA



WIRE RAILINGS
WINDOW GUARDS
WIRE CLOTH
Established 1835.
DUFUR & CO.
309 N. Howard St., Baltimore, Md.

PLUMBING and HEATING

POWER & HAND PUMPS DAIRY SUPPLIES
PROMPT SERVICE.
HACKNEY BROTHERS CO.
No. 6 West 5th St., Charlotte, N. C.

Advertising conserves the Manufacturer's time by acquainting him with a service or product at his leisure long before the need for such arises.

Commission Merchants, Yarn Dealers, Cotton Dealers, and Brokers, Etc.

H. Ray Paige, Pres. J. A. Mandeville, Vice-Pres. J. H. Schoolfield, Secy. and Treas.

Southern Cotton Yarn Co., Inc.

1 Madison Avenue, New York City

SELLING AGENTS FOR

SOUTHERN MILLS

Carded—Combed Yarns

4's TO 120's SINGLE AND PLY

Selling Direct to Consumer.
NEW ACCOUNTS SOLICITED.

Weimar Bros.

Phone Connections
Works, 2046-48 Amber Street,
PHILADELPHIA, PA.

MANUFACTURERS OF
Cotton Mercerized Tapes, Spool Tapes, Bindings and Narrow Fabrics for Underwear and other Trades.

ESTABLISHED 1872

H. & B. BEER

NEW ORLEANS

HENRY BEER EDGAR H. BRIGHT
J. WILLIAM BARKDULL C. MORGAN ABRAMS

MEMBERS OF
New Orleans Cotton Exchange
New Orleans Future Brokers Association
New York Stock Exchange
New York Cotton Exchange
New York Coffee Exchange
New York Produce Exchange
Chicago Board of Trade

Associate Members of the Liverpool Cotton Association

Private Wires to Principal Points

HUGHES FAWCETT

IMPORTER AND COMMISSION MERCHANT

LINEN YARNS

For Weaving, Knitting and all Purposes

TURKEY RED YARNS

For Towel Borders, Towellings and Bleaching Cloth

Linen Jacquard Harness Twine

And Every Description of Linen Thread and Twine

15 Franklin Street, : NEW YORK

WOODWARD, BALDWIN & CO.

DRY GOODS

Commission Merchants

43-45 WORTH STREET, NEW YORK

The Recognized Standards of Quality

COTTON YARNS

Our Fine Yarns Make Fine Fabrics

The manufacturers of a number of America's well known textile products can vouch for the strength, uniformity, cleanliness, and better weaving and knitting qualities of our yarns.

The yarns we spin for knitting, weaving, laces and converting, are furnished in all twists on skeins, cones, tubes and warps:

36s to 80s Single and Ply Combed Peeler Right Twist. 36s to 50s Single and Ply Double Carded Peeler, Right or Reverse Twist.

20s to 60s, 2, 3, and 4 Ply, Combed Peeler, Reverse Twist.

Our products are sold direct and exclusively through our General Sales Offices:

131 East 23d Street,
New York.
H. A. FLORSHEIM, Sales Manager
Long Distance Phone: Gramercy 812
New England Representative
H. D. Skinner,
212 Summer St. Boston, Mass.

Gray Manufacturing Co.
Arrow Mills, Inc.

Parkdale Mills, Inc.
Flint Manufacturing Co.

Arlington Cotton Mills
Myrtle Mills, Inc.

MYRTLE MILLS INC. COTTON YARNS GASTONIA, N.C.

PARKDALE MILLS, Inc. PARKDALE YARNS ARE THE BEST GASTONIA, N.C.

ARLINGTON COTTON MILLS COTTON YARNS GASTONIA, N.C.

FLINT MFG. CO. GASTONIA, N.C.

J. SPENCER TURNER CO.

56 WORTH STREET, NEW YORK

COTTON DUCK

ARMY—SAIL—WIDE

"LOWELL" TIRE FABRICS-SPECIAL DUCK

CRASHES—TWILLS—DRILLS—SATTEENS

ROPE—TWINE

COTTON YARNS

ESPECIAL ATTENTION GIVEN TO EXPORT REQUIREMENTS

CHICAGO
208 So. LaSalle Street

PHILADELPHIA
M. & M. Building

BOSTON
161 Devonshire Street

HAMILTON, CANADA
J. Spencer Turner of Canada, Limited

Hunter Manufacturing & Comm. Co.

58-60 Worth St.,

NEW YORK CITY U. S. A.

WORLD-WIDE DISTRIBUTOR OF COTTON FABRICS

COTTON FABRICS FOR HOME AND EXPORT

DOMESTIC BRANCH OFFICES

Boston Chicago San Francisco
Philadelphia St. Louis Greensboro
Baltimore

FOREIGN BRANCH OFFICES

Buenos Aires, Argentine Curacao, D. W. I. Caracas, Venezuela
Santiago, Chile
San Juan, Porto Rico Havana, Cuba Barranquilla, Columbia

Financing the Textile Industry

AN adequate and steady flow of banking capital is a vital necessity for mill owners, selling agents, and other interests in the textile industry.

Through a factoring arrangement with this Company, such interests are enabled to finance their current operations; but in addition to the usual facilities supplied by factors, the Company is also empowered to finance raw material requirements, and to provide for such growth as the rising volume of business demands.

We shall have pleasure in discussing with manufacturers, selling agents, and others any concrete problems which have to do with the financing of their business.

TEXTILE BANKING COMPANY
(Incorporated)
50 Union Square New York
(4th Avenue and 17th Street)

Capital $2,000,000 *Surplus $500,000*

Inaugurated by GUARANTY TRUST COMPANY OF NEW YORK
and LIBERTY NATIONAL BANK OF NEW YORK

WILLIAM L. BARRELL CO.

BOSTON
NEW YORK

8 Thomas St.
NEW YORK

CHICAGO
SAN FRANCISCO

COTTON DUCK

WIDE
SAIL
ARMY

SINGLE FILLING
DOUBLE FILLING
ENAMELING

KEEP The CROP MOVING

"Shawmut Bank Has Helped" To Move Crops Since 1836

For more than eighty years the National Shawmut Bank of Boston has been identified with the development of the cotton industry from field to factory.

The rehabilitation of Europe is largely a problem of securing raw and manufactured cotton. Conditions at home and abroad demand more than ordinary attention to the questions of markets and financing on the part of the American cotton manufacturer and cotton grower.

The National Shawmut Bank of Boston places at the disposal of American cotton exporters and manufacturers, whether for the financing of export shipments of raw staple or of manufactured goods, or of stocks in warehouses, the benefit of intimate knowledge of market conditions gained through years of contact with every phase of the cotton industry.

THE NATIONAL SHAWMUT BANK OF BOSTON

Resources over $250,000,000

New England is Vitally Interested in Cotton and the Cotton Industry

As the largest financial institution in New England we are able to finance this business to the best advantage.

THE FIRST NATIONAL BANK OF BOSTON

Capital, Surplus and Profits . . .	$ 37,500,000
Deposits	170,000,000
Total Resources	262,000,000

—*With Offices in the Four Principal Georgia Cities.*

—And with correspondents throughout the South, the Citizens & Southern Bank is in position to give SUPER-COLLECTION SERVICE.

Every Collection Item receives individual attention, and the excellent service this department is giving is making it one of the most important in the bank.

Capital and Surplus $4,500,000

The Citizens & Southern Bank

Atlanta—Marietta at Broad

Savannah Macon Augusta

"No account too large, none too small"

The Atlanta National Bank has been granted by the Federal Reserve Board FULL TRUST POWERS and now has the privilege of acting as—

Trustee, Executor, Administrator, Registrar of Stocks and Bonds, Guardian of Estates, Assignee and Receiver, and is fully empowered to perform these services.

The establishment of a TRUST DEPARTMENT by the ATLANTA NATIONAL BANK was in response to a demand for a fully equipped Banking Service—

One that would combine under one roof and management every phase of MODERN BANKING, Commercial, Savings and Trust.

Every possible safeguard that modern methods can provide will be employed for use in this new department in accordance with our well established custom.

In addition to the SAFETY afforded by the extraordinary strength of this bank with its $32,000,000 of resources and its fifty years of successful general banking experience, the Trust Department will be under the supervision of the Federal Government. This is, indeed, a very important factor in reckoning the STRENGTH and SAFETY of an institution about to be entrusted with Trust Funds.

In entering this larger field we take this occasion to thank our many friends for the loyal co-operation they have given us. We fully appreciate the fact that our steady and consistent growth would have been impossible but for the general and unbounded confidence in the Atlanta National Bank.

The Atlanta National Bank

Active Designated Depository of the United States, the State of Georgia, County of Fulton and City of Atlanta.

GEORGIA RAILROAD

Passenger Department

SCHEDULE CHANGES

ALL AGENTS AND CONNECTIONS:

Effective April 25, 1920, there will be important changes in schedule on the Georgia Railroad. New time at terminals and junction points shown below:

MAIN LINE—Eastbound.

No. 2—Daily—Leave Atlanta 5:55 A. M. (Central Time), Covington 8:24 A. M. (Eastern Time), Social Circle 9:00 A. M., Madison 9:35 A. M., Union Point 10:35 A. M., Barnett 11:15 P. M., Camak 10:40 A. M., arrive Augusta 1:35 P. M.

No. 6—Daily—Leave Atlanta 12:15 P. M. (Central Time), Covington 2:30 P. M. (Eastern Time), Social Circle 2:50 P. M., Madison 3:20 P. M., Union Point 4:10 P. M., Barnett 4:50 P. M., Camak 5:12 P. M., Thomson 5:30 P. M., arrive Augusta 6:40 P. M.

No. 8—Daily—Leave Atlanta 3:25 P. M. (Central Time), Covington 5:57 P. M., (Eastern Time), Social Circle 6:19 P. M., Madison 6:50 P. M., Union Point 7:40 P. M., Barnett 8:32 P. M., arrive Camak 8:55 P. M., leave 9:10 P. M., arrive Augusta 10:45 P. M.

No. 4—Daily—Leave Atlanta 7:40 P. M. (Central Time), as at present, flag at Decatur 9:00 P. M. (Eastern Time), Covington 10:01 P. M., Social Circle 10:25 P. M., Madison 10:55 P. M., arrive Augusta 2:25 A. M. as at present.

No. 14—Daily—Leave Atlanta 6:10 P. M. (Central Time) as at present, arrive Social Circle 9:25 P. M. (Eastern Time). (This train was formerly operated daily except Sunday).

No. 10—Daily—Washington to Augusta—No Change.

MAIN LINE—Westbound.

No. 3—Daily—Leave Augusta 2:15 A. M. (Eastern Time) as at present, Madison 5:45 A. M., Social Circle 6:20 A. M., Covington 6:45 A. M., arrive Atlanta 7:25 A. M. (Central Time). Flag at Conyers, Lithonia, and Decatur to discharge passengers from points beyond Social Circle.

No. 1—Daily—Leave Augusta 7:00 A. M. (Eastern Time), Camak 8:55 A. M., Barnett 9:22 A. M., Union Point 10:00 A. M., Madison 11:05 A. M., Social Circle 11:45 A. M., Covington 12:10 P. M., arrive Atlanta 12:50 P. M. (Central Time).

No. 5—Daily—Leave Augusta 11:00 A. M. (Eastern Time), Thomson 12:10 P. M., Camak 12:30 P. M., Barnett 12:50 P. M., Union Point 1:25 P. M., Greensboro, 1:40 P. M., Madison 2:20 P. M., Social Circle 2:50 P. M., Covington 3:11 P. M., arrive Atlanta 3:35 P. M. (Central Time).

No. 7—Daily—Leave Augusta 3:00 P. M. (Eastern Time) as at present. No change up to Union Point, Greensboro 6:00 P. M., Madison 6:50 P. M., Social Circle 7:20 P. M., Covington 7:48 P. M., arrive Atlanta 8:30 P. M. (Central Time).

No. 9—Daily—Leave Augusta 6:15 P. M. (Eastern Time), Camak 8:27 P. M., Barnett 8:55 P. M.

No. 13—Daily, except Sunday—Leave Social Circle 6:30 A. M. (Eastern Time), Covington 6:55 A. M., Conyers 7:17 A. M., Lithonia 7:30 A. M., Stone Mountain 7:58 A. M., arrive Atlanta 7:40 A. M. (Central Time).

No. 15—Sunday only—Leave Social Circle 7:45 A. M. (Eastern Time), Covington 8:10 A. M., Conyers 8:37 A. M., Lithonia 8:50 A. M., Stone Mountain 9:10 A. M., arrive Atlanta 8:50 A. M. (Central Time).

MACON DIVISION (Eastern Time).

No. 31—Daily—Leave Camak 9:05 A. M., Sparta 10:00 A. M., Milledgeville 10:58 A. M., arrive Macon 12:20 P. M.

No. 33—Daily—New Train. Leave Camak 5:20 P. M., Sparta 6:16 P. M., Milledgeville 7:08 P. M., arrive Macon 8:30 P. M.

No. 35—Daily—Leave Camak 9:25 P. M., Sparta 10:26 P. M., Milledgeville 11:21 P. M., arrive Macon 12:40 A. M.

No. 30—Daily—Leave Macon 5:20 A. M., Milledgeville 6:40 A. M., Sparta 7:36 A. M., arrive Camak 8:45 A. M.

No. 32—Daily—New Train. Leave Macon 1:35 P. M., Milledgeville 2:45 P. M., Sparta 3:30 P. M., arrive Camak 4:40 P. M.

No. 34—Daily—Leave Macon 5:50 P. M., Milledgeville 7:08 P. M., Sparta 8:09 P. M., arrive Camak 9:05 P. M.

ATHENS DIVISION (Eastern Time).

No. 51—Daily—Leave Union Point 10:50 A. M., Crawford 11:47 A. M., arrive Athens 12:40 P. M.

No. 53—Daily—Leave Union Point 8:00 P. M., Crawford 8:54 P. M., arrive Athens 9:45 P. M.

No. 50—Daily—Leave Athens 8:00 A. M., Crawford 8:41 A. M., arrive Union Point 9:45 A. M.

No. 52—Daily—No change.

WASHINGTON BRANCH (Eastern Time).

No. 41—Daily—No change.

No. 43—Daily—No change.

No. 9—Daily—Leave Barnett 9:00 P. M., arrive Washington 9:50 P. M.

No. 40—Daily—Leave Washington 8:15 A. M., arrive Barnett 9:03 A. M.

No. 42—Daily—No change.

No. 44—Daily except Sunday—No change.

No. 10—Daily—No change.

MONROE BRANCH (Eastern Time).

No. 83—Daily—Leave Social Circle 9:05 A. M., arrive Monroe 9:40 A. M.

No. 85—Daily—Leave Social Circle 12:05 P. M., arrive Monroe 12:40 P. M.

No. 87—Daily—Leave Social Circle 6:20 P. M., arrive Monroe 6:50 P. M.

No. 91—Daily—Leave Social Circle 9:30 P. M., arrive Monroe 10:00 P. M.

No. 82—Daily—Leave Monroe 11:05 A. M., arrive Social Circle 11:35 A. M.

No. 84—Daily—Leave Monroe 5:35 P. M., arrive Social Circle 6:05 P. M.

No. 86—Daily—Leave Monroe 6:50 P. M., arrive Social Circle 7:20 P. M.

No. 90—Daily except Sunday—Leave Monroe 6:00 A. M., arrive Social Circle 6:30 A. M.

No. 92—Sunday only—Leave Monroe 7:10 A. M., arrive Social Circle 7:40 A. M.

LEXINGTON BRANCH (Eastern Time).

No. 71—Daily except Sunday—Leave Crawford 9:00 A. M., arrive Lexington 9:25 A. M.

No. 73—Daily except Sunday—Leave Crawford 11:55 A. M., arrive Lexington 12:20 P. M.

No. 75—Daily except Sunday—Leave Crawford 4:40 P. M., arrive Lexington 5:05 P. M.

No. 70—Daily except Sunday—Leave Lexington 8:00 A. M., arrive Crawford 8:25 A. M.

No. 72—Daily except Sunday—Leave Lexington 11:00 A. M., arrive Crawford 11:25 A. M.

No. 74—Daily except Sunday—Leave Lexington 3:45 P. M., arrive Crawford 4:10 P. M.

UNION POINT & WHITE PLAINS RAILROAD.

Daily Except Sunday. Eastern Time.

No. 61—Leave Union Point 10:55 A. M., arrive White Plains 11:55 A. M.

No. 63—Leave Union Point 8:00 P. M., arrive White Plains 8:50 P. M.

No. 60—Leave White Plains 8:35 A. M., arrive Union Point 9:35 A. M.

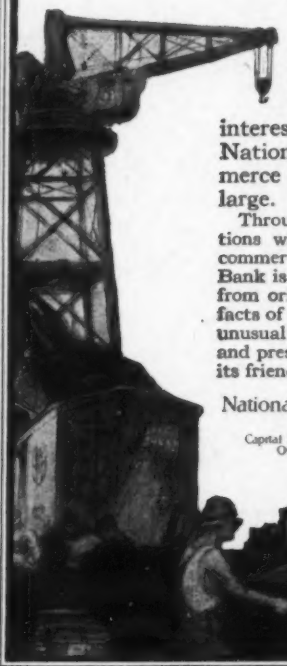
No. 62—Leave White Plains 4:25 P. M., arrive Union Point 5:25 P. M.

Please give the above schedule figures all publicity possible.

Issued by

J. P. BILLUPS, General Passenger Agent,
Atlanta, Ga.

The Wisdom of Facts



Sound business judgments are guided by facts.

The business interests served by the National Bank of Commerce in New York are large.

Through its extensive relations with the structure of commerce and industry, this Bank is able to draw widely from original sources for the facts of business. It devotes unusual effort to gathering and presenting these facts to its friends.

National Bank of Commerce in New York

Capital Surplus and Undivided Profits Over Fifty Million Dollars

HOTEL Sinton

CINCINNATI

THE courtesy of the Hotel Sinton's personnel and the fine cuisine of this modern hostelry are points of note among commercial travelers and tourists.

THE HOTEL SINTON offers extensive accommodations. A fine, new 300-room wing is to be completed July 20, 1920.

Cincinnati's Leading Hotel

700 Rooms, all with Bath or Shower.

Management JOHN L. HORGAN

Classified Opportunities.

LONDON (U. K.) Wholesale Clothing Manufacturers require Distributing House or larger buyers for Men's SUITS from 35/- to 80/-; Men's TROUSERS from 8/6 to 16-/; SPORTING JACKETS from 23/-. Many lines in boys' and juveniles'. Send Samples to show cut and make required. M. Gorden Ltd., 51 Fann St., London, E. C. 1.

Positions Wanted

WANTED—Position as superintendent in a small mill or overseer of carding in a large mill. Have had seven years experience as overseer of carding in large mills; also experience in spinning and weaving. Textile graduate, 1909. Can handle almost any position in a mill. Can furnish first class references as to character and ability. Address Box 17, care COTTON, Atlanta, Ga.

Positions Open

Textile Representative Wanted.

A large, well known manufacturer of textile oils has an unusual opportunity to offer to reliable firm who is in touch with Southern Cotton and Textile Mills. Must be thoroughly acquainted among the trade and be conversant with sizing preparations, wool oils, soaps and softeners. Address Box 20, COTTON, Atlanta, Ga.

RATES:

WITHOUT DISPLAY.

"Positions Wanted" 3 cents per word per insertion. Minimum charge 50 cents. Payable in advance.

"Positions Open" and other undisplayed advertisements, 4 cents per word per insertion. Minimum charge $1.00. Payable in advance.

(When replies are to be received in our care, allow four words for box address.)

DISPLAYED.

"For Sale" and all other advertisements using bold-face type or otherwise displayed, $2.00 per inch per insertion.

Rates for larger spaces furnished on application.

WANTED

1 Dronsfield card mounting machine. Advise condition and price. Address Box 19, care COTTON, Atlanta, Ga.

HAVE YOU?

Have you any proposition to put before the executives in the textile mills of the South?

Whatever your message, this "Classified Opportunities section of COTTON is the logical place for the announcement of your requirements.

A little ad. won't cost much. Try it for a month or so.

For Sale

New and Second Hand

ENGINES

Corliss Automatic and Slide Valve

BOILERS

Pumps, Hoisting Engines, Gas and Gasoline Engines.

MACHINE TOOLS

Lathes, Planers, Shapers, Drill Presses, etc.

WOOD WORKING

Planers, Molders, Band Saws, etc.

ELEC. MACHINERY

Dynamos and Motors

AND SUPPLIES OF ALL KINDS

FRANK TOOMEY, Inc.,

127-31 N. Third St.

Philadelphia, - Pennsylvania

Miscellaneous

S. S. STORER, M.E., C.E.
Complete plans for
Textile Mills, Commercial Buildings, Bridges.
Personal Attention, Fees Reasonable.
Atlanta, Ga.

SECOND-HAND MACHINERY FOR SALE

LAPPERS

1—40" 2 beater Kitson breaker with feeder.
1—40" 1 beater Saco Lowell finisher.
1—40" 2 beater Pollard & Johnson breaker with feeder.
2—40" 1 beater Atherton Finisher.
4—40" H & B Finishers.

CARDS

4—40" Hetherington.
12—37" H & B.
1—60" 3 cylinder garnett.
3—40" wool.
2—Kitson threaded extractors.
1—34" Kitson 1 cylinder Burr Picker.

DRAWINGS

2—Pettee, 6 deliveries each 10" coil, leather roll.
18—Whitin, 4 deliveries 12" coil, leather roll.
10—Whitin, 6 deliveries 12" coil, leather roll.

SLUBBERS

2—12x6 Saco water power, fall delivery.
3—11x5½ Saco water power, 60 spindles.
1—11x5½ Hetherington 48 spindles.
1—11x5½ Lowell 40 spindle.

INT. SPEEDERS

4—9x4½ Saco water power, 100 spindles each. Fall delivery.
6—9x4½ Saco Pettee, 84 spindles each.
1—9x4½ Lowell, 96 spindles each.

SPEEDERS

5—8x4 Providence. 104 spindles each. Summer delivery.
2—8x3½ Saco water power, 128 spindles each. (Fall).
2—8x4 Herthington, 120 spindles each.
2—8x4 Hetherington, 120 spindles each.

SPINNING

4—Lowell, 2¾ gauge 1¾ rings, 144 spindles each.
23—Whitin, 2¾ gauge 1¾ rings, 194 spindles each.

SPOOLERS

1—4x6 Whitin 100 spindle.
3—4x6 Lowell, 60 spindles each.
3—4x6 Lowell, 100 spindles each.

WINDERS

3—No. 6 Foster, 100 spindles each.
10—Lowell Cam'les, 16 spindles each.
6—No. 50 Universal.

WARPERS

4—Hopedale Section beam warper.
1—Entwistle Ball warper.
1—Lowell Section Beam Warper.
1—double head single linker.
1—double head double linker denn.
1—double Ball attachment for warper.

TWISTERS

4—192 spindle Hopedale, 3½" gauge, 2" rings, creel for 4 ply.
1—192 spindle F & J wet twisters, 2¾ gauge 1¾ rings.
1—220 H & B wet twisters, 3¼ gauge 2¼ ring.
2—200 spindle Draper twister 3½ gauge 2¼ rings.
1—Tod rope machine with double former.
1—Haskell & Dawes Rope Machine, 2 formers, 1 coiler, producing 1600 lbs. per day.

CLOTH ROOM MACHINERY

1—40" C & M Brusher.
1—40" C & M Calender.
1—40" Folder.
1—40" Lowell Folder.

LOOMS

42—40" Whitin equipped 5 to 16 harness.
150—34" A—Model Draper automatic.
150—32" E—Model Draper automatic.
74—40" plain Mason, practically new.
12—40" Crompton & Knowles, equipped for ginghams.
98—37½ Crompton & Knowles, 2 to 5 harness.

MISCELLANEOUS

1—new lirom bobbin cleaner.
1—new 20-spindle Payne Winder.
10,000 filling bobbins, No. 2 Draper spindle.
10,000 4x6 twister bobbins, wood or metal head.
2500 filling twister bobbins for Draper twisters.
10,000 warp spinning bobbins.
5000—3 ring filling quills for No. 2 Draper spindle.
7000—2 ring filling quills for Whitin Gravity spindle.
117 ft.—38" 3 ply leather belt.
25 ft.—9" 2 ply leather belt.
75 ft.—8" 2 ply leather belt.
25 ft.—6" 2 ply leather belt.
500—10" Roving Cans.
1—36" Kitson Condenser with pipe and fan.
40—Gordon & Hay Card Attachment for H & B Cards.
3—Dasey Yarn Pressers, double screw.
1—Small hand post drill.
1—Hose extractor direct connected 36" copper basket.
1—48" broad bent extractor copper basket, steam driven.
1—William Firth Co. Card Stripper for 40" card.
3—No. 5 B. Suction Fans.
1—15" Sturtevant Fan.
1—No. 6 15" Sturtevant Fan.
2—New Whitin gear cutters.

Write or Wire ATLANTA TEXTILE MACHINERY CO., AUSTELL BLDG., ATLANTA, GA.

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Acetylene Welding Apparatus.
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Acetylene Gas.
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Oxweld Acetylene Co.
Prest-O-Lite Co.
Southern Welding Co.
Standard Gas Products Co.
Waterhouse Welding Co.
Accountants.
(See Auditors and Accountants.)
Air Brakes.
Allis-Chalmers Mfg. Co.
Air Washers
American Blower Co.
American Moistening Co.
Carrier Eng. Corp.
New York Blower Co.
Parks-Cramer Co.
Sturtevant Co., B. F.
Air Conditioning Systems.
(See Humidifying Apparatus.)
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Roessler & Hasslacher Chemical Co.
Alkalies.
(See Dyestuffs and Chemicals.)
Aniline Colors.
(See Dyestuffs and Chemicals.)
Anti-Chlorine.
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Aprons-Rub.
Ladew & Co., Inc., Edw. R.
Smith & Furbush Machine Co.
Graton & Knight Mfg. Co.
Architects and Engineers.
Aberthaw Construction Co.
Donaghey & Co., P. J.
Draper, E. S.
Ferguson Co., John W.
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Sirrine, J. E.
Ash Handling Machinery.
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Portable Machinery Co.
Asphalt Slate Shingles.
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Ernst & Ernst.
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Automatic Loom Attachments.
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American Kron Scale Co.
Ball Bearings.
Aldrich Mch. Works.
Hyatt Roller Bearing Co.
New Departure Mfg. Co
S K F Industries.
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Ball Bearing Rolls.
Campbell Mfg. Co.
Ball Bearing Spindles.
Allen Spindle Corp.
Ball Bearing Housings.
Aldrich Mch. Works.
Bale Band Buckles.
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Bale Ties.
Acme Steel Goods Co.
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Signode System, Inc.
Baling Machines.
Crompton & Knowles Loom Wks.
Draper Corporation.
Economy Baler Co
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Galland-Henning Mfg. Co.
Hulme, J. S.
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Philadelphia Drying Mchry. Co.
Smith & Furbush Mfg. Co.
Bandages, Tapes, Etc.
American Textile Banding Co.
Banding Straps and Buckles.
Acme Steel Goods Co.
Lovingood Co.
Regnas & Co., J. R.
Signode System, Inc.
Banks.
Atlanta National Bank.
Citizen & Southern Bank.
First National Bank of Boston.
Irving National Bank.
National Bank of Commerce in New York.
National Shawmut Bank.
Textile Banking Co., Inc.
Bars (Corrugated for Concrete Reinforcement).
Corrugated Bar Co.
Barometers (Mercurial).
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.
Barrels—Fibre.
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Baskets—Mill.
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Batteries (Elec.)
(See Storage Batteries).
Beam Dyeing Machines.
Cocker Mchry. & Foundry Co.
Beam Heads (Steel).
Mossberg Co., Frank
Beaming and Warping Mchry.
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Bearings.
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Hyatt Roller Bearing Co.
New Departure Mfg. Co
Standard Pressed Steel Co.
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U. S. Ball Bearing Co.
Valley Iron Works.
Belting.
American Supply Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
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Ladew & Co., Inc., Edw. R.
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Walraven Co.
Williams & Co., I. B.
Belting—Chain Link.
Link-Belt Company.
Morse Chain Co.
Belting—Rope.
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Belt Conveyors.
Link-Belt Company.
Morse Chain Co.
Portable Machinery Co.
Williams & Sons, I. B.
Belt Dressing.
Jos. Dixon Crucible Co.
Goodyear Tire & Rubber Co.
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Ladew & Co., Inc., Edw. R.
Walraven Co.
Williams & Co., I. B.
Belt Fasteners.
Crescent Belt Fastener Co.
Flexible Steel Lacing Co.
Belt Hooks.
Crescent Belt Fastener Co.
Belt Lacing.
Crescent Belt Fastener Co.
Flexible Steel Lacing Co
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Jewell Belting Co.
Ladew & Co., Inc., Edw. R.
Stanley Belting Corp.
Walraven Co.
Williams & Sons, I. B.
Belt Rivets.
Crescent Belt Fastener Co.
Belt Tighteners.
Link-Belt Company.
Williams & Sons, I. B.
Benches (Park & Playground).
Hill-Standard Co.
Billiard Tables & Etc.
Brunswick-Balke-Collender Co.
Bleacheries.
(See Dyers, Bleachers and Finishers.)
Bleaching Kiers.
Butterworth & Sons Co., H. W.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Textile Finishing Machinery Co., The
Bleaching Machinery.
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Bleaching Materials.
Althouse Chemical Co.
Aniline Dyes & Chemicals, Inc.
Arabol Mfg. Co.
Arnold, Hoffman & Co.
Atlantic Dyestuff Co.
Barrett Co.
Bosson & Lane.
Born, Scrymser Co.
Dow Chemical Co.
Du Pont de Nemours & Co., E. I.
Electro Bleaching Gas Co.
Electric Smelting & Alum. Co.
Grasselli Chemical Co.
Kali Mfg. Co.
Klipstein & Co., A.
Moore Oil Refining Co.
National Aniline & Chemical Co.
Newport Chemical Works, Inc.
Roessler & Hasslacher Chemical Co.
Surpass Chemical Co.
United Chemical Products Corp.
Wolf & Co., Jacques
Blowers and Blower Systems.
American Blower Co.
Carrier Eng. Corp.
General Electric Co.
New York Blower Co.
Phila. Drying Machinery Co.
Sturtevant Co., B. F.
Westinghouse Elec. & Mfg. Co.
Boards—Fibre.
Diamond State Fibre Co.
Boards—Form.
Pearson, Jos. T.
Bobbins.
Brown Co., The David
Draper Corporation.
Greenville Spool & Mfg. Co.
Jordan Mfg. Co.
Shambow Shuttle Co.
Whitin Machine Works.
Bobbin Heads.
Diamond State Fibre Co.
Boilers.
Crymes Mchry. & Supply Co.
International Engineering Wks., Inc.
Jones Mchry. Corp.
Lombard Iron Works & Supply Co.
Schofield's Co., J. S.
Toomey, Frank.
Walsh & Weidner Boiler Co.
Boiler Feed Water Purification.
Permutit Co.
Refinite Co.
Scaife & Sons, Wm. B.
Boiler Room Fittings & Supplies.
Crane Co.
International Engineering Co.
Jenkins Bros.
Lunkenheimer Co.
Boiler Graphite.
Jos. Dixon Crucible Co.
Box Strapping and Tie Buckles.
Acme Steel Goods Co.
Lovingood Co.
Regnas & Co., J. R.
Signode System, Inc.
Boxes—Mill.
Diamond State Fibre Co.
Hightower Box & Tank Co.
Keystone Fibre Co.
Lane & Bros., W. T.
Rogers Fibre Co.
Standard Fibre Co.
Bowling Alleys, Etc.
Brunswick-Balke-Collender Co.
Braids.
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Brake Linings.
Diamond State Fibre Co.
Brazing.
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Brushes—Mill.
Felton Brush Co., D. D.
Felton, S. A. & Son Co.
Brushes—Commutator.
Dixon Crucible Co., Jos.
General Electric Co.
Westinghouse Elec. & Mfg. Co.
Buckets & Pails—Mill.
Keystone Fibre Co.
Rogers Fibre Co.
Standard Fibre Co.
Buckets—Elevator and Grab.
Link-Belt Company.
Buckles—Cotton Tie.
(See Box Strapping and Ties).
Building Contractors.
(See Architects & Engineers.)
Buildings—Portable.
Lockwood, Greene & Co.
Aladdin Co.
Tuxbury Lumber Co., A. C.
Building Material.
Aladdin Co.
American Cast Iron Pipe Co.
Anchor Post Iron Works.
Barrett Co., The
Birmingham Slag Co.
Carlisle & Gale Co.
Corrugated Bar Co.
Detroit Steel Products Co.
Dufur & Co.
Excello Mfg. Co.
Hurst Co.
Kirkpatrick Lumber & Timber Co.
Lockwood, Greene & Co.
Nashville Hardwood Flooring Co.
Peaslee-Gaulbert Co., Inc.
Portland Cement Asso.
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Tuxbury Lumber Co., A. C.
Bungalows (Quickly Built).
Aladdin Co.
Tuxbury Lumber Co., A. C.
Burr Pickers.
Sargent's Sons, C. G.
Smith & Furbush Machine Co.
Bushings.
Diamond State Fibre Co.
Southern Spindle & Flyer Co.
Calenders.
Textile Finishing Mchy. Co.
Calender Rolls.
Roy & Son, B. S.
Calling System (Inter Telephone).
Carter Elec. Co.
Cans—Roving.
Diamond State Fibre Co.
Keystone Fibre Co.
Rogers Fibre Co.
Standard Fibre Co.
Cars and Trucks—Fibre.
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Car Unloaders.
Portable Machinery Co
Carbonizing Machines.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Sargents Sons & Co., C. G.
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Carding Machinery.
Howard & Bullough.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Southern Spindle & Flyer Co.
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Howard & Bullough.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.
Card Feeds.
Schofield, Wm. Co.
Smith & Furbush Mach. Co.
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Card Grinding Machinery.
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Carpet Machinery.
Butterworth, H. W., & Sons Co.
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Carrier Aprons.
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Casement Window Hardware.
Richards-Wilcox Mfg. Co.
Castings.
American Cast Iron Pipe Co
Lombard Foundry & Mch. Co.
McNaughton Mfg. Co.
Valley Iron Works.
Walsh & Weidner Boiler Co.
Cast Iron Columns.
American Cast Iron Pipe Co.
Caustic Soda.
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Cement Machinery.
Allis-Chalmers Mfg. Co.
Cement Reinforcement.
Corrugated Bar Co.
Cement and Brick Coating.
Cooledge & Sons, F. J.
Dixon Crucible Co., Jos.
Hurst Co.
Peaslee-Gaulbert Co., Inc.
Tropical Paint Co.
Wadsworth Howland & Co., Inc.
Chain Drives.
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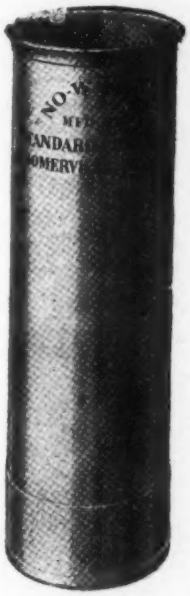
Chain (Block, Bicycle, Auto Engine, Agricultural, Etc.)
Morse Chain Co.
Chairs and Stools
Wright Co.
Reischmann Co.

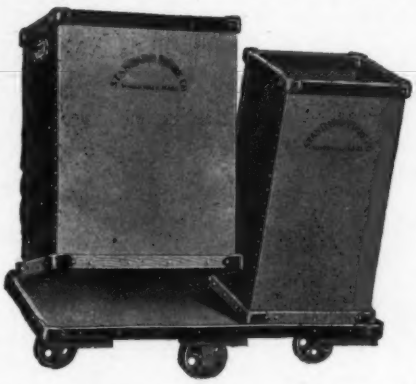
THREE USEFUL RECEPTACLES



OVAL
and
GILL
CANS

BOXES

DOFFING
TRUCKS



PLAIN HARD FIBRE
and
STEEL CLAD TRUCKS

BARRELS

NO-WASTE

SEAMLESS FIBRE ROVING CAN.

This means quality and smoothness, eliminating all waste and broken ends.

WATCH FOR

Our new type of CONTINUOUS ANGLE construction on Steel Clad Trucks illustrated in later issue.

STANDARD FIBRE CO. **25 Miller St., Somerville, Mass.**

Do You Want to Sell It?

Probably you, like many other plants, have some equipment or machinery which you have taken out, or are thinking of taking out and replacing with new equipment.

Why not dispose of that second-hand equipment at a profit? COTTON is read by thousands of textile men, and perhaps that equipment is just what one of them wants.

You Can Sell Your Second-Hand Equipment

to these plants through advertising in the Resale Section of COTTON. Such advertising produces results at small cost—why not try it out and get that second-hand equipment off your hands in a profitable way? Tell us what you have for sale and let us insert an advertisement for you.

COTTON

Grant Building, **ATLANTA, GA.**

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Stafford Co.
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Sturtevant Co., B. F.
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Frederick Disinfectant Co.
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Doffing Cars.
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Richards-Wilcox Mfg. Co.
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Taylor Instrument Co.
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Steel Heddle Mfg. Co.
Drying Apparatus.
New York Blower Co.
Sturtevant Co., B. F.
Drying Forms (Hosiery).
Pearson, Jos. T.
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American Laundry Mchry. Co.
Butterworth, H. W. & Sons Co.
Proctor & Schwartz, Inc.
Sargent's Sons Corp., C. G.
Textile Finishing Machinery Co., The
Dust Collectors.
(See Blowers and Blowing Systems.)
Dusting Machinery.
Schofield Co., Wm.
Smith & Furbush Mach. Co.
Dyers, Bleachers and Finishers.
American Processing Co.
Dyeing, Bleaching, Finishing and Printing Machinery.
American Laundry Mchry. Co.
Atlas Electric Devices Co.
Butterworth & Sons Co., H. W.
Cocker Mch. & Foundry Co.
Electro Bleaching Gas Co.
Firsching, J. A.
Fletcher Works.
Permutit Co.
Phila. Drying Machinery Co.
Proctor & Schwartz, Inc.
Refinite Co.
Reliance Machine Works.
Rome Mch. & Fdry. Co.
Schaum & Uhlinger.
Textile Finishing Machinery Co., The
Tolhurst Machine Works.
Dye Sticks.
Phila. Drying Machinery Co.
Dyestuffs and Chemicals.
Althouse Chemical Co.
Aniline Dyes & Chemicals, Inc.
Arabol Mfg. Co.
Arnold, Hoffman & Co.
Atlantic Dyestuff Co.
Barrett Co.
Borne, Scrymser Co.
Bosson & Lane.
Dow Chemical Co.
Du Pont de Nemours & Co., E. I.
Electro Bleaching Gas Co.
Grasselli Chemical Co.
Hemingway Inc., Frank
Kali Mfg. Co.
Klipstein & Co., A.
Lewis, John D.
Metz & Co., H. A.
Moore Oil Refining Co.
National Aniline & Chemical Co.
Newport Chemical Works, Inc.
Roessler & Hasslacher Chemical Co.
Sunbass Chemical Co.
United Chemical Products Corp.
Wolf & Co., Jacques
Ejectors.
Sherwood Mfg. Co.
Electric Dynamos and Motors.
(See Motors and Generators.)
Electric Fans.
(See Fans—Electric.)
Electric Lamps.
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Electric Lamp Guards.
Flexible Steel Lacing Co.
Electrical Engineers and Contractors.
Dixie Electrical Equipment Co.
Huntington & Guerry, Inc.
Imperial Electric Co.
Electrical Machinery and Supplies.
Adams-Bagnall Electric Co.
Allis-Chalmers Mfg. Co.
Atlas Electric Devices Co.
Benjamin Electric Co.
Bryan Electric Co.
Carter Electric Co.
Crouse-Hinds Co.
Crymes Mchry. & Supply Co.
Dixie Electrical Equipment Co.
Economy Fuse & Mfg. Co.
General Electric Co.
Jones Mchry. Corp.
Multiple Electric Products Co.
Phila. Electric Co.
Seeger Machine Tool Co.
Walraven Co., The
Walsh & Weidner Boiler Co.
Westinghouse Electric & Mfg. Co.
Electrical Repairing (all kinds).
Bryan Electric Co.
Dixie Electrical Equipment Co.
Electric Tractors and Trucks.
(See Tractors & Trucks—Elec.)
Elevators.
Collins, J. D.
Link-Belt Company.
Seeger Machine Tool Co.
Enamel—Mill White.
(See Paint—Mill White.)
Engineers (Mill).
(See Architects.)
Engines—Oil, Gas and Gasoline.
Crymes Mchry. & Supply Co.
Seeger Machine Tool Co.
Engines—Steam.
Allis-Chalmers Mfg. Co.
Crymes Mchry. & Supply Co.
Jones Mchry. Corp.
Lombard Iron Works & Supply Co.
Schofield's Sons Co., J. S.
Toomey, Frank
Walsh & Weidner Boiler Co.
Engine Appliances—Oil and Steam.
Crane Co.
Crymes Mchry. & Supply Co.
Jenkins Bros.
Jones Mchry. Corp.
Lunkenheimer Co.
Sherwood Mfg. Co.
Engine Room Supplies.
Crane Co.
Crymes Mchry. & Supply Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Jenkins Bros.
Jones Mchry. Corp.
Lunkenheimer Co.
Sherwood Mfg. Co.
Walraven Co.
Exporters (Cotton).
(See Brokers.)
Extractors—Hydro.
American Laundry Mchry. Co.
Fletcher Works.
Schaum & Uhlinger.
Tolhurst Machine Works.
Fans—Electric.
Allis-Chalmers Mfg. Co.
American Blower Co.
Benjamin Electric Co.
Bryan Electric Co.
Carter Electric Co.
General Elec. Co.
Westinghouse Elec. & Mfg. Co.
Fans—Conveying, Power and Exhaust.
(See Blowers and Blowing Systems.)
Fasteners (Belt).
(See Belt Fasteners.)
Feed Water Purifiers.
(See Water Softeners.)
Felting Machinery.
Smith & Furbush Mch. Co.
Fence—Steel and Iron.
American Cast Iron Pipe Co.
Anchor Post Iron Works.
Cyclone Fence Co.
Fibre Products.
Diamond State Fibre Co.
Keystone Fibre Co.
Rogers Fibre Co.
Standard Fibre Co.
Filters—Water.
(See Water Softening.)
Film (Moving Picture).
Rothacker Film Co.
Finishing.
(See Dyers, Bleachers and Finishers.)

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BUYERS' INDEX—Continued.

Finishing and Sizing Materials.
Althouse Chemical Co.
Aniline Dyes & Chemical, Inc.
Arabol Mfg. Co.
Arnold, Hoffman & Co.
Berne, Schrymser Co.
Bossen & Lane.
Corn Products Refining Co.
Dobbins Soap Mfg. Co.
Dow Chemical Co.
Du Pont de Nemours & Co., E. I.
Electric Smelting & Alum. Co.
Grasselli Chemical Co.
Kali Mfg. Co.
Keever Starch Co.
Klipstein & Co., A.
Newport Chemical Works, Inc.
Metz & Co., H. A.
Moore Oil Refining Co.
National Aniline & Chemical Co.
Roessler & Hasslacher Co.
Co.
United Chemical Products Corp.
Warren Soap Mfg. Co.
Wolf & Co., Jacques

Fire Alarm Apparatus.
Dixie Electric Equip. Co.

Fire Doors.
Richards-Wilcox Mfg. Co.

Fire Door Hardware (Automatic).
Richards-Wilcox Mfg. Co.

Fire Escapes (Spiral).
Collins, J. D.

Fire Hose.
(See Paint—Fireproof.)

Fire Protecting Paint.
(See Hose—Fire.)

First Aid Room Equipment.
(See Hospital Equipment.)

Flood Lights (Elec.)
Crouse-Hinds Co.

Flooring (Hardwood).
Kirkpatrick Lum. & Timber Co.
Nashville Hardwood Flooring Co.
Southern Cypress Mfg. Co.

Floor Scrubbing Machine.
American Scrubbing Machine Co.

Fluted Rolls.
Campbell Mfg. Co.
Howard & Bullough.
Saco-Lowell Shops.
Schofield's Sons Co., J. S.
Smith & Furbush Machine Co.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Flyers.
Howard & Bullough.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Fountains (Drinking).
Central Brass Mfg. Co.
Crane Co.
Jewett Refrigerator Co.
Mfg. Equipment & Eng'g Co.
Mott-Southern Co.
Rundle-Spence Mfg. Co.
Southern States Supply Co.
Taylor Co., Halsey W.

Friction Clutches.
(See Clutches—Friction.)

Fuses.
(See Elec. Mchy. and Supplies.)

Garage Door Hardware.
Richards-Wilcox Mfg. Co.

Garnett Machines.
Roy Son Co., B. S.
Smith & Furbush Mach. Co.

Gas Engines.
(See Engines—Gas.)

Gasoline Tanks and Pumps.
Wayne Oil Tank & Pump Co.

Gaskets.
Diamond State Fibre Co.
Graton & Knight Mfg. Co.

Gauge Cocks.
Lunkenheimer Co.

Gauges—Draft.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Gauges—Mercury Column Vacuum.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Gauges—Oil.
Lunkenheimer Co.

Gauges (Pressure).
Tagliabue Mfg. Co., C. J.

Gauges (Recording).
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co

Gauges—Water.
Lunkenheimer Co.

Gears—Silent.
Diamond State Fibre Co.
General Electric Co.
Link-Belt Company.
Morse Chain Co.

Gear Cutting and Cutters.
Cresson-Morris Co.
Southern Welding & Machine Co.
Reischmann Co.
Whitin Mch. Co., D. E.

Gear Pullers.
Grab Co., Inc.

Generators—Electric.
(See Motors and Generators.)

Governors (Pressure).
Tagliabue Mfg. Co., C. J.

Governors (Pump).
Tagliabue Mfg. Co., C. J.

Graphite—Products.
Dixon Crucible Co., Jos.

Grates (Boiler).
International Eng. Works.
Lombard Fdy. & Mch. Co.
McNaughton Mfg. Co.

Grease.
(See Lubricants.)

Grease Cups.
(See Lubricators.)

Grindstones.
Richards-Wilcox Mfg. Co.

Grinders—Card, Cylinder Roll, Napper and Garnett.
(See Card Grinding Machinery.)

Guards (Elec. Lamp.)
Flexible Steel Lacing Co.

Guides (Thread).
Mitchell-Bissell Co.
Palmer Co., I. E.

Gums.
(See Finishing and Sizing Materials.)

Hangers.
(See Shafting and Hangers.)

Harness—Loom.
American Supply Co.
Crompton & Knowles Loom Wks.
Emmons Loom Harness Co.
Garland Mfg. Co.

Heads (Bobbin & Spool).
Diamond State Fibre Co.

Heating and Ventilating Apparatus.
(See Ventilating Apparatus.)

Heddles.
Crompton & Knowles Loom Wks.
Draper Corporation.
Steel Heddle Mfg. Co.

Heddle Frames.
Crompton & Knowles Loom Wks.
Steel Heddle Mfg. Co.

Hinges & Butts.
McKinney Mfg. Co.

Hoists.
Link-Belt Company.
Morse Chain Co.
Pasco Tool Co.
Seeger Machine Tool Co.
Walraven Co.

Hose—Fire.
Collins, J. D.
Goodyear Tire & Rubber Co.
U. S. Rubber Co.

Hosiery Dyeing Machinery.
Cocker Mch. & Fdry. Co
Rome Mach. & Fdry. Co.

Hosiery Finishing Boards.
(See Boards.)

Hosiery Forms.
(See Drying Forms.)

Hosiery Yarns.
(See Yarn Manufacturers.)

Hospital Equipment.
Thomas Co., F. H.
Wright Co.

Hotels.
Sinton.

Houses (Ready-Made).
(See Bungalows.)

Humidifying Apparatus.
American Blower Co.
American Moistening Co.
Carrier Eng. Corp.
New York Blower Co.
Parks-Cramer Co.
Sturtevant Co., B. F.

Humidity Indicating Instruments.
Tagliabue Mfg. Co., C. J.
Tagliabue Mfg. Co., C. J.
Tagliabue Mfg. Co., C. J.

Hydraulic Turbines.
(See Turbines—Steam.)

Hydro Extractors.
(See Extractors.)

Hydrometers.
Taylor Instrument Co.

Hygrometers.
Taylor Instrument Co.

Hygrodeiks.
Taylor Instrument Co.

Indicating and Recording Instruments and Thermometers.
Powers Regulator Co.
Taylor Instrument Co.
Tagliabue Mfg. Co., C. J.

Indigo.
(See Dyestuffs and Chemicals.)

Injectors.
Lunkenheimer Co.
Sherwood Mfg. Co.

Insulation (Vulcanized Fibre).
Diamond State Fibre Co. Sai

Insurance.
Miller Indemnity Underwriters.

Ink—Stencil and Marking.
Atlanta Stamp & Stencil Wks.
Bradley Mfg. Co., A. J.
Lovingood Co.
National Marking Machine Co.
Regnas & Co., J. R.

Iron Work—Ornamental.
American Cast Iron Pipe Co.
Anchor Post Iron Works.
Cyclone Fence Co.
Dufur & Co.
Lombard Iron Works & Supply Co.

Jacks.
Paulus, Chas. B.

Jacquards.
Crompton & Knowles Loom Wks.

Jute Bagging Machines.
Smith & Furbush Mach. Co.

Kettles—Size.
(See Size Kettles.)

Kettles—Soda.
Lombard Iron Works & Sup. Co.

Kiers.
(See Bleaching Kiers.)

Knit Goods.
(See Cotton Cloth Commission Merchants and Dealers.)

Knit Goods Washers.
(See Washers—Cloth.)

Knitting Machinery and Supplies.
Adams Co., Geo. H.
Boss Knitting Mach. Works.
Brinton Co., H.
General Machine Works.
Hemphill Mfg. Co.
Scott & Williams.
Wildman Mfg. Co.

Laboratory Instruments & Thermometers.
Tagliabue Mfg. Co., C. J.

Lacing (Belt).
Crescent Belt Fastener Co.

Lamps—Incandescent and Arc.
Adams-Bagnall Eelectric Co.
Benjamin Electric Co.
Boston Economy Lamp Div.
Bryan Electric Co.
Carter Electric Co.
Crouse-Hinds Co.
Jones Mchry. Corp.
General Electric Co.
Walraven Co.
Westinghouse Lamp Co.

Lamp Guards (Key Locking).
Flexible Steel Lacing Co.

Lamp Reflectors.
Adams-Bagnall Eelectric Co.
Benjamin Electric Co.
Bryan Electric Co.
Carter Elec. Co.
Crouse-Hinds Co.
Ivanhoe-Regent Works.

Landscape Architects.
(See Village Architects.)

Lappers.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Whitin Machine Works.

Latch Needles.
Paulus, Chas. B.

Laundry Machinery.
American Laundry Mchry. Co.
Fletcher Works.
Schaum & Uhlinger.
Tolhurst Machine Wks.

Lavatories.
Crane Co.
Mfg. Equipment & Eng'g Co.
Taylor Co., Halsey W.
Jos. A. Vogel Co.

Leather Belting.
(See Belting.)

Leather Specialties.
American Supply Co.
Graton & Knight Mfg. Co.
Jewell Belting Co.
Ladew & Co., Inc Edw. R.
Williams & Sons, I. B.

Lights (Flood).
Crouse-Hinds Co.

Linen Yarns.
(See Yarns—Linen.)

Link Belting.
(See Belting—Linen.)

Linters.
(See Waste Dealers.)

Liquid Chlorine.
(See Chlorine.)

Loaders—Wagon and Trucks.
Link-Belt Company.
Portable Machinery Co.

Locks and Latches.
Richards-Wilcox Mfg. Co.

Lockers (Metal).
Collins, J. D.
Medart Mfg. Co., Fred.

Logwood Extract.
(See Dyestuffs and Chemicals.)

Looms.
Crompton & Knowles Loom Wks.
Draper Corporation.
Fletcher Works.
Jones Mchry. Corp.
Mason Machine Works.
Saco-Lowell Shops.
Schaum & Uhlinger.
Schofield, Wm. & Co.
Stafford Co., The

Loom Attachments (Automatic).
Draper Corporation.

Loom Harness.
(See Harness.)

Lumber (See Building Material).

Lubricants.
Dixon, Jos., Crucible Co.
N. Y. & N. J. Lubricant Co.
Swan & Finch Co.
Texas Co.

Lubricant, Tanks and Pump.
Wayne Oil Tank & Pump Co.

Lubricators.
Lunkenheimer Co.
N. Y. & N. J. Lubricant Co.
Sherwood Mfg. Co.

Lug Straps.
(See Straps—Lug.)

Lumber.
Kirkpatrick Lum. & Timber Co.
Southern Cypress Mfg. Asso.

Lunch Room Equipment.
(See Restaurant.)

Machine Tools.
(See Tools.)

Marking (Dry Transfer).
Kaumagraph Co.

Marking Pots, Stencils, Inks, Etc.
Atlanta Stamp & Stencil Wks.
Bradley Mfg. Co., A. J.
Lovingood Co.
National Marking Machine Co.
Regnas & Co., J. R.

Marking Machines.
National Marking Machine Co.

Mercerized Yarns.
(See Yarns Mercerized.)

Mercerizing Machinery.
Butterworth, H. W. & Sons Co.
Textile Finishing Machinery Co.

Metal Ceilings, Etc.
Lupton's Sons Co., David

Metals (Perforated).
(See Screens and Sieves.)

Metal Workers—Sheet.
Lombard Iron Works & Supply Co.

Meters—Flow, Air, Gas, Electric, Steam, Etc.
Allis-Chalmers Mfg. Co.
Benjamin Electric Co.
Bryan Electric Co.
Carter Electric Co.
General Electric Co.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.
Westinghouse Elec. & Mfg. Co

Meters (Revolution)
Taylor Instrument Co.

Mill Baskets and Boxes.
(See Boxes—Mill.)

Mill Engineer.
(See Architects and Engineers.)

Mill Villages.
(See Villages.)

Mill Supplies (Misc.).
(See Supplies—Mill).

Mill White Paint.
(See Paint—Mill White.)

Monorail Conveying Systems.
Richards-Wilcox Mfg. Co.

Motors and Generators—Electric.
Adams-Bagnall Eelectric Co.
Allis-Chalmers Mfg. Co.
Bryan Electric Co.
Carter Electric Co.
Crymes Mchry. & Supply Co.
Dixie Electrical Equipment Co.
General Electric Co.
Jones Mchry. Corp.
Seeger Machine Tool Co.
Walraven Co., The
Westinghouse Elec. & Mfg. Co.

Moving Picture Mach. & Supplies.
Lucas Theatre Supply Co.
Rothacker Film Co.
Southern Theatre Equip. Co.

Mule Stands.
Transmission Ball Bearing Co.

Nails—Cement Coated.
Lovingood Co.
Regnas Co., J. R.

Nappers.
Roy & Son Co., B. S.

Needles—Latch.
Paulus, Chas. B.

Oils.
Hampden Paint & Chem. Co.
Wadsworth, Howland & Co., Inc.

Oils—Finishing
(See Finishing and Sizing Materials.)

Oils—Lubricating.
(See Lubricants.)

Oil Cups.
(See Lubricators.)

Oil Paper.
Bradley Mfg. Co., A. J.

Oil Tanks & Pumps.
Wayne Oil Tank & Pump Co.

Oil Testing Instruments.
Tagliabue Mfg. Co., C. J.

Oiling Devices.
(See Lubricators.)
Ins.

Openers for Cotton, Wool, Waste Etc.
Saco-Lowell Shops.
Schofield Co., Wm.
Smith & Furbush Mach. Co.
Whitin Machine Works.

Oxidizing Machinery.
Phila. Drying Machinery Co.

Oxygen.
Commercial Acetylene Supply Co
Linde Air Products Co.
Oxweld Acetylene Co.
Prest-O-Lite Co.
Standard Gas Products Co.
Waterhouse Welding Co.

Package Tying Machine.
Bunn & Co., B. H.

Packings.
Goodyear Tire & Rubber Co.

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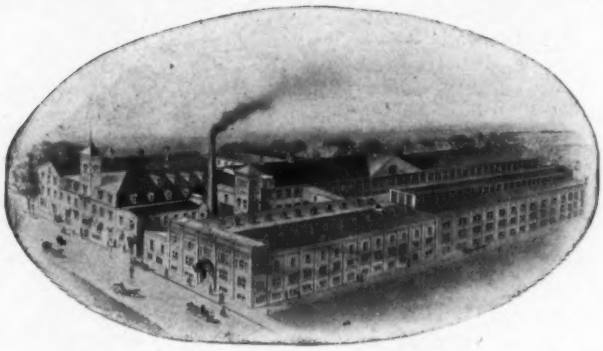

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BUYERS' INDEX—Continued.

Graton & Knight Mfg. Co.
Jenkins Bros.
Walraven Co.
U. S. Rubber Co.

Paint.
Atlanta Gas Light Co.
Barrett Co., The
Cooledge & Sons, F. J.
Du Pont de Nemours & Co., E. I.
Excello Mfg. Co.
Gulf States Creosoting Co.
Hampden Paint & Chem. Co.
Hurst Co.
Johnson Paint Co.
Peaslee-Gaulbert Co., Inc.
Tropical Paint Co.
Wadsworth, Howland & Co., Inc.

Paint—Preservative and Fireproof.
Atlanta Gas Light Co.
Barrett Co.
Cooledge & Sons, F. J.
Du Pont de Nemours & Co., E. I.
Excello Mfg. Co.
Hampden Paint & Chem. Co.
Gulf States Creosoting Co.
Hurst Co.
Johnson Paint Co.
Peaslee-Gaulbert Co., Inc.
Tropical Paint Co.
Wadsworth, Howland & Co.
Walraven Co.

Paint—Mill White.
Cooledge & Sons, F. J.
Du Pont de Nemours & Co., E. I.
Excello Mf- Co.
Hurst Co.
Hampden Paint & Chem. Co.
Peaslee-Gaulbert Co., Inc.
Tropical Paint Co.
Wadsworth, Howland & Co., Inc.

Paper.
Bradley Mfg. Co., A. J.
Diamond State Fibre Co.

Perforated Metal.
(See Screens and Sieves.)

Peroxides.
Roessler & Hasslacher Chemical Co.

Pickers—Curled Hair.
Schofield, Wm. Co.
Smith & Furbush Mach. Co.

Pickers—Leather.
Garland Mfg. Co.

Picker Sticks.
Garland Mfg. Co

Picking Machinery.
Howard & Bullough, Am. Machine Co.
Saco-Lowell Shops.
Schofield Co., Wm.
Smith & Furbush Mach. Co.
Whitin Machine Works.

Pinions.
Diamond State Fibre Co.

Pipe Fittings.
Crane Co.
Lunkenheimer Co.
Walraven Co.

Pipe Threading & Cutting Machines.
Seeger Machine Tool Co.
Walraven Co., The

Playground Equipment.
Hill-Standard Co.
Medart Mfg Co., Fred.

Pool Tables, Etc.
Brunswick-Balke-Collender Co.

Power Transmission.
Aldrich Mch. Wks.
Allis-Chalmers Mfg. Co.
Carlyle-Johnson Mch. Co.
Cresson-Morris Co.
Crymes Mchry. & Supply Co.
Dodge Sales & Eng. Co.
General Electric Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Hyatt Roller Bearing Co.
Jewell Belting Co.
Jones Mchry. Corp.
Ladew & Co., Inc., Edw. R.
Link-Belt Company.
Morse Chain Co.
New Departure Mfg. Co.
S K F Industries.
Seeger Machine Tool Co.
Standard Pressed Steel Co.
Stanley Belting Corp.
U. S. Ball Bearing Co.
U. S. Rubber Co.
Valley Iron Works.
Walraven Co., **The**
Westinghouse Elec. & Mfg. Co.
Williams & Sons, I. B.

Presses.
American Laundry Machnry. Co.
Bridge & Co., Ltd., David
Butterworth & Sons Co., H. W.
Economy Baler Co.
Gallard-Henning Mfg. Co.
Lovingood Co.
Phila. Drying Mch. Co.
Proctor & Schwartz, Inc.
Reliance Machine Works.
Seeger Machine Tool Co.
Smith & Furbush Mch. Co.
Textile Finishing Machinery Co., The

Pulleys.
Cresson-Morris Co.
Diamond State Fibre Co.
Dodge Sales & Eng. Co.
Link-Belt Company.
Seeger Machine Tool Co.
Valley Iron Works.
Walraven Co., **The**

Pulley Covering.
Goodyear Tire & Rubber Co.
Stanley Belting Corp.
Williams & Sons, I. B.

Pumps.
Allis-Chalmers Mfg. Co.
Jones Mchry. Corp.
Seeger Machine Tool Co.
Textile Finishing Machinery Co.
Toomey, Frank
Walraven Co.
Walsh & Weidner Boiler Co., The
Westinghouse Elec. & Mfg. Co.

Pump Oil).
Wayne Oil Tank &Pump Co.

Pump Valves.
(See Valve Discs.)

Psychrometers (Sling).
Taylor Instrument Co.

Pyrometers.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Quill Cleaning Machines.
Terrell Mch. Co.
Dufur & Co.

Receptacles (Fibre).
(See Fibre Products.)

Recording Instruments.
Powers Regulator Co.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Recorders (Draft).
Tagliabue Mfg. Co., C. J.

Recorders (Pressure).
Tagliabue Mfg. Co., C. J.

Recorders (Temperature).
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Reeds.
American Supply Co.
Emmons Loom Harness Co.

Reed Polishing Machines.
Shawmut Eng'g Co.

Reels.
Cocker Mch. & Fdry. Co.
Crompton & Kowles Loom Wks.
Draper Corporation.
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Whitin Machine Works.

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Walraven Co.

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Standard Scale & Supply Co.
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Barrett Co.

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Dow Chemical Co.
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Grasselli Chemical Co.
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Draper Corporation.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.

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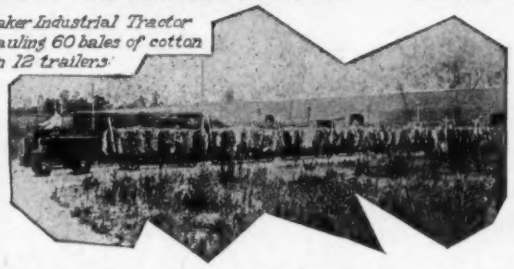

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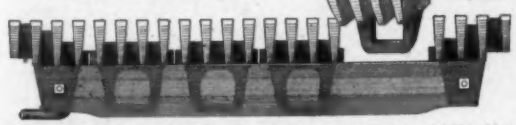

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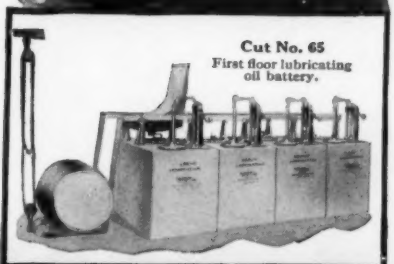
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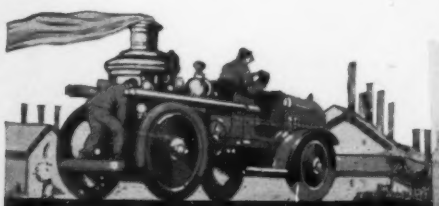

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